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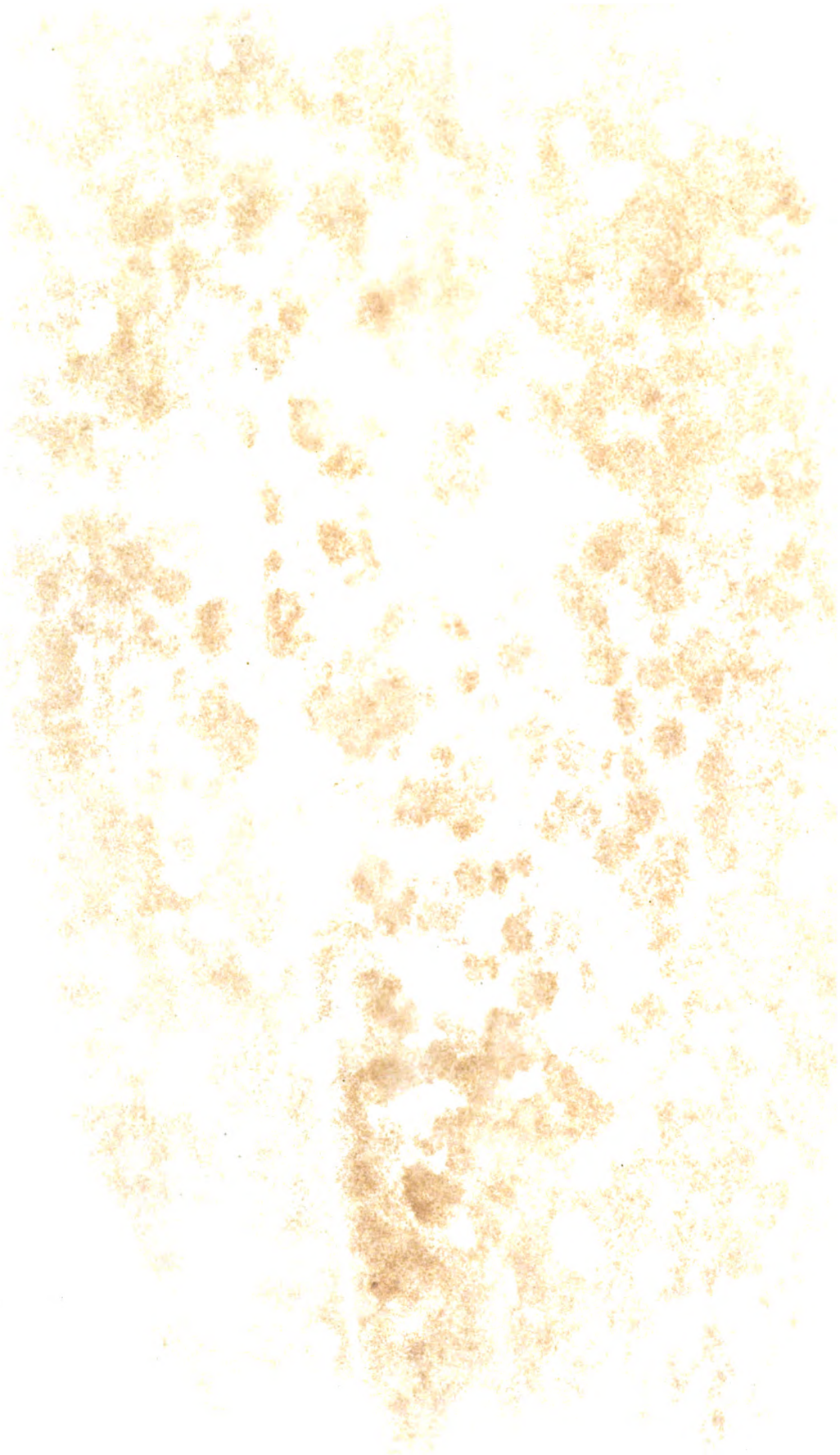
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THE MOTOR WORLD

548008

A Trade Paper Giving the World's Motor News

Vol. XXXIII
No. 1

New York, September 26, 1912

Ten cents a copy
Two dollars a year

"DISCO"

REG. U.S. PAT. OFFICE

Two Pillars of Strength to the Sales Force

No other one new feature closed more sales the past season than the DISCO equipment. The Disco Starter and Disco Lighter will make sales for you this year—the absence of these will give the advantage to your competitor.

The DISCO Marks the Leader of Each Class

America's Progressive manufacturers select the DISCO. Here are some that have already contracted for 1913:

Locomobile	**Simplex**	**Selden**	**Republic**
Pierce-Arrow	**American**	**Buick**	**Davis**
Packard	**Marion**	**Havers**	**Pilot**
Stevens-Duryea	**Henderson**	**Jackson**	**McLaughlin**

The motorist who knows demands the DISCO—the dealer who knows demands the DISCO—the manufacturer who knows puts it on his cars.

The new model "16" DISCO—as far ahead of the first DISCO models as the Disco has ever been ahead of all others—weighs less than four pounds, has but 12 parts, and is quickly fitted to any car. It sells at $30 for a 4-cylinder car —$35 for a six. Let us quote you terms and prices.

IGNITION STARTER COMPANY 715 Dodge Building DETROIT, MICHIGAN

A BIG OPPORTUNITY There is some good territory still open for 1913, and we want to hear from live agents and dealers. Write us today.

Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York

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27 Manufacturers equip their cars with the

Truffault-Hartford SHOCK ABSORBER

Is the car YOU sell likewise equipped?

The manufacturers of 27 leading cars equip their product with the Truffault-Hartford—at the factory.

These farsighted manufacturers recognize the real and widespread demand for this device —on the part of owners—everywhere. They know—as experts—how Truffault-Hartford equipment adds to the selling value of their cars—how it promotes car-efficiency—insures maximum riding comfort—and reduces the cost of upkeep.

Does the car YOU sell enjoy the advantage of Truffault-Hartford equipment?

Through our comprehensive advertising campaigns, car owners have learned why Truffault-Hartford equipment belongs on the car they should buy. And YOU—as an elert, progressive dealer—should insist that the car YOU sell has this device as regular factory equipment.

We would be pleased to communicate further with dealers who want to know more about the Truffault-Hartford.

HARTFORD SUSPENSION COMPANY

EDW. V. HARTFORD, President

Factory, 164 Bay Street — **Jersey City, N. J.**

BRANCHES

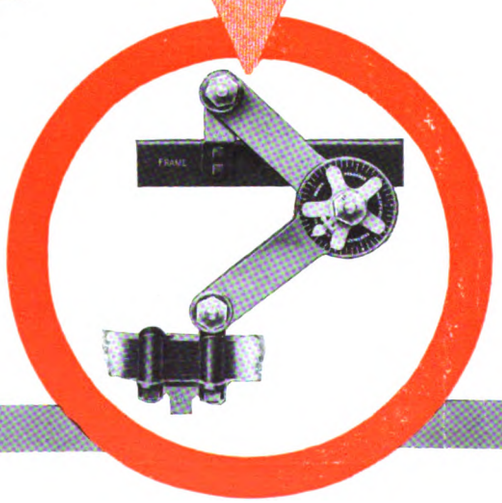
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141-143 Morgan Street

BOSTON
319-325 Columbus Avenue

CHICAGO
1458 Michigan Avenue

DETROIT
803 Woodward Avenue



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NEWARK
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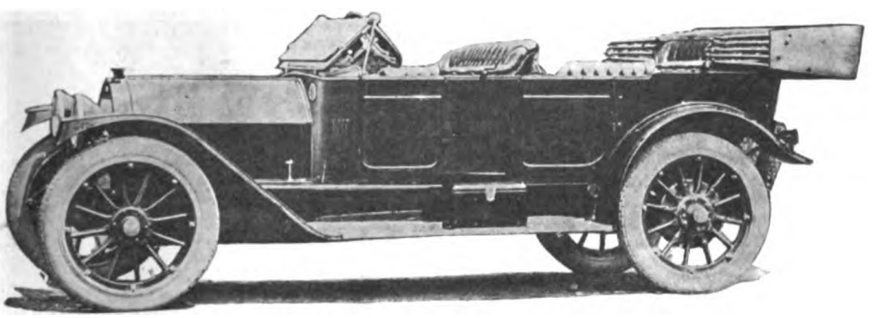
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A Good Salesman With "Quality" Back of His Argument Can't Lose



A Year in Advance of the Rest

SERIES A 1913



Prices $1,850 to $3,500
FULLY EQUIPPED



Dynamo Electric Lighted
Four Speeds Forward
Mechanical Automatic Self-Starter

KLINE KAR

A Prudent Dealer

will select an automobile of permanent utility requiring the least possible cost of maintenance. Kline Kars are made from the very best materials obtainable and the parts are assembled by men who have given their whole time and effort to perfecting the machine that is A YEAR IN ADVANCE OF THE REST.

Aside from the features noted above the new series Kline Kar has a smokeless motor, deep upholstering, auxiliary rear springs, quick detachable demountable rims, straight line bodies, beautiful design, and above all else, strength and speed.

Some Territory Open. Better Write Now.

Send for Catalogue.

KLINE MOTOR CAR CORPORATION

York, Pa. **Richmond, Va.**

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Mr. Automobilist:

Your tire maker is very anxious to impress upon you the importance of

Tires Inflated to the Right Pressure

He insists that this is tire economy and

Saves You Money

How do you know what pressure you have in your tires? A

SCHRADER
UNIVERSAL
Tire Pressure Gauge

(Trade Mark Registered in U. S. Patent Office)



(Patented March, 1898—Other Patents Pending)

will tell the exact pressure in your tires at any time, day or night, by simply holding this Gauge to your Valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the Gauge can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the Indicating Sleeve can be pushed back into the Gauge with your finger. No catches or snaps to operate or get out of order. This Gauge is 2½ inches long over all, short enough to apply easily to the smallest diameter of wheel and can easily be carried in the vest pocket or the change pocket of your trousers.

Price $1.00 Each
Ready for Delivery Now

Guaranteed Simple and Absolutely Accurate

Can be obtained from all tire manufacturers and the dealers, or

A. SCHRADER'S SON, Inc.
28-32 Rose Street New York City

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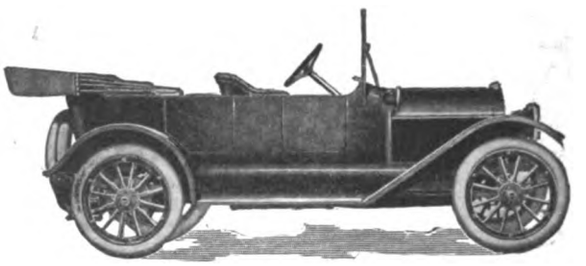
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Marion

37-A *Completely Equipped* **$1475**

Here Is The Car We've Promised You

EQUIPMENT: Disco self-starter; Prest-O-Lite tank; Dynamo electric lighting system, all lamps; Warner speedometer; Q. D. demountable rims, one extra; Ventilating plate glass windshield; 80-hour storage battery; Mohair top, boot, storm curtains; Tire irons; Concealed tool boxes; Robe rail; Foot rest; Tools, pump, jack, tire kit.

BODY: Five passenger, big and roomy; graceful lines, flush sides; divided front seats; deep upholstering, hand-buffed leather; center control; all doors open towards front; deep cowl over dash; gasolene filler tube between front seats.

FINISH: Rich brewster green or deep wine color; metal trimmings nickel plated; wood trimmings mahogany; lamps black enameled; fenders, hood, dust shields baked enamel.

MOTOR: Four cylinders, long stroke, cast in pairs; bore and stroke 4 x 5 inches; horsepower 30-40; large valves, valve springs enclosed; automatic carburetor, steering column adjustment; dual ignition, magneto and batteries; 3-point suspension; constant level oiling system (circulating).

CHASSIS: Wheelbase 112 inches; pressed steel frame; cone clutch, spring inserts; 3 forward speed transmission, selective type; shaft drive; front axle I-beam drop forging, rear axle double trussed; front springs semi-elliptic, rear ¾-elliptic, imported steel; four double acting brakes, large and effective; strong steering gear; artillery wheels; 34 x 4 inch tires.

Features such as these establish the Marion 37-A as a car of unusual value at such a moderate price. Write for further information, illustrated, about this car.

To automobile dealers we offer the fairest sales agreement ever written. Ask about territory.

The Marion Motor Car Company

918 Oliver Avenue, Indianapolis, Ind.

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Overland 1913

$985

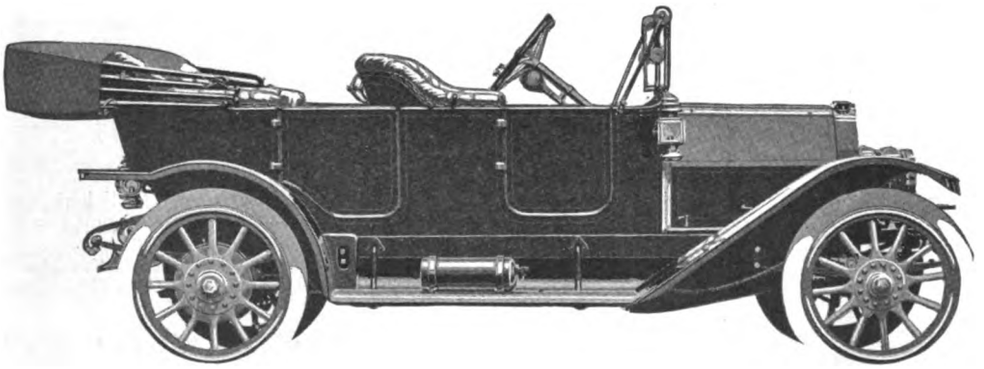
Completely Equipped

Result of a 40,000 Car Production

Self Starter	*Remy Magneto*
30 Horsepower	*Warner Speedometer*
5-Passenger Touring Car	*Mohair Top and Boot*
110-inch Wheel Base	*Clear Vision Wind Shield*
Timken Bearings	*Prestolite Tank*
Center Control	

¶ Just as startling as the modern automobile was, 10 years ago, in this Overland value for 1913. We seek nor need no descriptive phrases to praise it. The most casual examination can not fail to convince you of the unusual worth. Think of a 95 per cent. efficient factory making 40,000 cars in one season. Just ponder over that number; conceive of the economies to be practiced in such production. That is why, that when you buy an Overland Model 69 T you get it at what would be a wholesale price in another line. Let us mail a 1913 catalogue of particulars. Please address Dept. 50.

The Willys-Overland Company, Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, September 26, 1912 No. 1

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SCHRADER TO ACQUIRE TWITCHELL'S PATENT

Transaction Practically is Consummated and Will Terminate Two Suits —Will Broaden Schrader's Scope—License for Allen.

Unless a hitch should develop at the eleventh hour and fifty-ninth minute, of which there is practically no possibility, the suits of C. R. Twitchell and the Twitchell Gauge Co., of Chicago, against A. Schrader's Son, Inc., and the Allen Auto Specialty Co., of New York, never will come to trial.

The suits, which are of a number instituted by the Twitchell people, allege infringement of the C. R. Twitchell pressure tire gauge, covered by patent No. 927,-28, dated July 6, 1909, and as the Schrader gauge differs markedly and as the Schrader interests were known to possess patents issued some ten years prior to the Twitchell grant, it was generally expected that the litigation would be fought to a finish. The Twitchell company has been particularly active in asserting its claims in all directions, however, and a favorable opportunity presenting, and favorable terms being offered, A. Schrader's Son has practically consummated the purchase of the Twitchell patent, and thereby put an end to the legal proceedings. The papers in the transaction are all but signed, sealed and delivered.

Although the Schrader gauge differs in construction from the Twitchell type, the latter is more nearly approached by the Allen device, as is the case with several other pressure gauges. It is understood, however, that the Schrader and Allen interests are on such terms of amity that a license to operate under the Twitchell patent will be granted when the rights are acquired by Schrader's Son. The purchase of the patent, therefore, will strengthen the Schrader position and extend its scope to such an extent that it is stated that suits for infringement shortly will be instituted against several manufacturers of such gauges.

Grabowsky "Sacrifice" Case Goes Over.

The motion of John C. Kimble, a stockholder, for the appointment of a receiver for the Grabowsky Power Wagon Co., of Detroit, as a means of preventing the contemplated sale of the property by the creditors' committee which was due for a hearing in the Wayne County Chancery Court in that city on the 19th inst., went over until the 26th. Kimble, as exclusively stated in last week's Motor World, alleged that the creditors' committee of seven, who were constituted voting trustees and who have conducted the Grabowsky company for several months, had not properly conserved the interests of the stockholders and were preparing to sacrifice the property.

Kissel Center Shifted to Milwaukee.

To facilitate its operations and increase its output, the Kissel Motor Car Co., of Hartford, Wis., has acquired a plant in Milwaukee, which will be conducted in addition to the factory in Hartford. The Milwaukee building covers 200,000 square feet of floor space and will permit of a doubling of the output of Kissel cars. The general offices of the Kissel company also will be removed to Milwaukee.

Everitt Formally Adopts Flanders Name.

Formal notice of change of the Everitt Motor Car Co.'s name to Flanders Motor Co. has been filed with the Secretary of State of Delaware, in which state the Detroit company is incorporated. At the same time, a certificate of increase of capital from $3,000,000 to $3,750,000 also was filed.

PALMER & SINGER MAKE THEIR PEACE WITH DYER

They Recognize His Transmission Patent and Are Granted a License—Minor Suit in Process of Settlement.

Following the settlement a month ago whereby the Board of Trade secured licenses under the Dyer transmission patents and ended a long legal fight, the Palmer & Singer Mfg. Co., of Long Island City, N. Y., also has made its peace and has become a licensee under two of the Dyer patents, Nos. 885,986 and 921,963, thus ending litigation which had been pending some two years in the United States District Court for the Southern District of New York, and concluding practically all of the suits brought by the Enterprize Automobile Co. against automobile manufacturers in its fight for recognition of the Dyer grants. The Palmer & Singer peace was concluded Thursday night, 19th inst., when signed copies of the papers were exchanged.

The terms are what the Enterprize people call "the usual license rate," which is one-tenth of one per cent. At this rate every time the Palmer & Singer company sells a model for $2,000 $2 will go into the treasury of the Enterprize concern, which consists largely of Leonard H. Dyer, a New York attorney and the inventor of the devices. Settlement also was made of claims of past damages.

The present settlement does not, however, terminate all of the differences between Palmer & Singer and Dyer, for there still is pending in the Federal court in Brooklyn a suit over other Dyer claims. Negotiations looking toward settlement are in progress, however, and they probably

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will be consummated within a week or ten days. The Brooklyn suit is over patent No. 657,650, which covers a gear shift H-plate; this patent is one of the group of five under which the Board of Trade's predecessor, the Association of Licensed Automobile Manufacturers, held rights.

Palmer & Singer's position throughout the Dyer suits has been that of an outsider so far as the organized manufacturers have been concerned. When the Association of Licensed Automobile Manufacturers held the Selden patent and also rights under five of the earlier Dyer patents, Palmer & Singer was a Selden licensee only, and when Dyer began his suits, Palmer & Singer, not being a member of the A. L. A. M., fought alone.

New Yorkers to Exploit Foreign Engine.

For the purpose of exploiting a new type of imported internal combustion engine which is said to bear a slight resemblance to the Knight engine, and for which the American rights have been obtained, the Motor and Gear Improvement Co., of New York, has been incorporated under the laws of New York state with an authorized capital of $1,250,000. Among the incorporators are Henry C. Derham, 2d, and Dwight Partridge, both of whom are intimately connected with the Aristos Co., of 250 West 54th street, New York City, of which company Partridge is the secretary. Although their names do not appear among the incorporators, it is understood that Lewis B. Brown, who is vice-president of the Aristos Co., Ralph Pulitzer, the head of the New York World, and John T. Pratt also are financially interested in the venture. At the office of the Aristos company it was said that Brown was out of town and Partridge declared the time was not quite ripe to divulge information regarding the project.

Durant's Company Secures Randolph Plant.

The Sterling Motor Co., of Flint, Mich., which recently was organized with authorized capital of $300,000 by W. C. Durant and his associates, has acquired the factory building in that city, now occupied by the Randolph Motor Co., which manufactures the truck of that name. The plant will be used for the production of engines for the popular priced six-cylinder car which the Little Motor Car Co., of Flint. has in mind. Its factory having been sold over its head, so to speak, the Randolph company has been put to it to find a new location. It prefers to remain in Flint and the board of trade of that city is lending its assistance to that end, but if a suitable plant is not acquired, the Randolph company necessarily will move to some other location.

INTERNAL DISSENTION UPSETS OMAHA COMPANY

Its President Haled to Court for Check Transaction and Charges Fly Thick and Fast—Stockholders at Odds.

Despite the promise which attended the inauguration, less than a year ago, of Nebraska's only automobile manufacturer, the Omaha Motor Car Co., by David W. Henry, already it is badly racked by internal dissention.

Henry, who is one of the veterans of the automobile industry and who played parts in the organization, successively, of the Inter-State and Colby companies, declares that all of the turmoil grows out of an attempt on his part to oust certain men from the company, among them W. A. Gordon and W. L. Huffman, preliminary to a reorganization of its affairs. However that may be, the trouble took an acute turn last week, when Henry, who is president of the Omaha Motor Car Co., was bound over to the district court on a charge of obtaining money under false pretense preferred by Gordon, a former officer and stockholder of the Omaha company, who also is president of the Gordon Warehouse & Van Co., of that city.

According to Gordon's complaint, Henry, on July 3d last, asked him to cash a check for $85, and Gordon, not having the money available, consented instead to exchange the Gordon company's check for Henry's check, which in due course went to protest. Henry admits the transaction, but in court maintained that at the time of the loan he told Gordon he had no money in bank and that he asked Gordon to hold his (Henry's) check until money due him from the Omaha Motor Car Co. had been paid. This was denied by Gordon, who insisted that Henry had represented to him that he had money in the Corn Exchange National Bank, on which his check was drawn, and the court, at any rate, believed the complaint and bound Henry for trial.

Mixed up in the affair is a difference concerning the sale of stock held by Gordon in the Omaha Motor Car Co. He claims he sold it, but Henry maintains that its tranesfer never was recorded.

Universal Cuts Tie to Settle Squabble.

As a result of the litigation in which the Universal Truck Co., of New York, became embroiled, the Universal Motor Truck Co., of Detroit, has resorted to stern measures and has canceled the agency contract and hereafter will conduct its business in New York as a factory branch at 146-150 West 63d street, where its service station is located. The New York company is a separate and distinct corporation and its troubles grew out of the attitude of George Walton, its former treasurer, who claimed he had been "frozen out" and who, only two weeks since, asked for the appointment of a receiver in order to enforce a settlement, which proceeding probably will result in the dissolution of the company. The Universal branch will be in charge of Howard W. Walton, who was the leading spirit in the New York Universal company.

Topics for Sales Managers' Discussion.

There will be no lack of subjects to discuss when the sales managers included in the membership of the Automobile Board of Trade get together on Monday next, 30th inst. The organization's trade committee, of which H. O. Smith is chairman, has outlined the following topics: Selling and Advertising; Territory and Discounts; Annual Model System; Motor Car Equipment; Enclosed Bodies; Freight; Shipping. The sales managers' convention will last two days, their gatherings being held in the Board of Trade offices at 7 East 42d street, New York City.

Tire Core Sued for Advertising Bill.

Charging that the Tire Core Co. of America, which is the metropolitan distributer of Dahl tire filler, has failed to pay the bill for its June advertising in New York and Brooklyn papers, the Wyckoff Advertising Co., of 1743 Broadway, New York City, has brought suit in the New York City Court. The amount asked for is $1,179.86. The defendant's answer is a general denial as to the bill.

Relief for DeTamble Is in Sight.

It seems probable that the much-troubled DeTamble Motors Co., of Anderson, Ind., shortly will emerge from the embarrassment which led to the appointment of a receiver several months since. At any rate, it is stated that an offer has been made for the property which, if accepted, will lead to placing the company on a firmer foundation than ever before. It is not unlikely that the matter will come to a head before the close of the present month.

More Coils Coming from Fond du Lac.

Growing out of the Duplex Coil Co., of the same city, the R. C. Wells Mfg. Co. has been organized in Fond du Lac, Wis., for the purpose of manufacturing spark coils and other ignition appliances. It is capitalized at $200,000, R. C Wells, L. J. Fuhrman and F. J. Rueping figuring as the incorporators.

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PROTECTIVE COMMITTEE DROPS DEEP, DARK HINTS

May Oppose U. S. Motors Reorganization Plan, But Committee Itself Is Mysterious—Hotel Waiter Who Sought "Protection."

Whatever the Protective Committee of the stockholders in the United States Motor Co. may be, it has plans outlined for procedure in the pending reorganization, but what those plans are is enveloped in considerable mystery. To date Frederick Drew Bond, of 15 Broad street, New York City, is the only known member of the committee, and he has advertised that he wishes to hear from stockholders with a view to concerted protective action. Apparently he is assembling the ends of strings which lead to stockholders throughout the country, and states that he expects to be able to announce something tangible within ten days; but he will give no inkling of their nature.

That all may not be peaceful on the way to reorganization is indicated by Bond, who states that the plans now under consideration are not at all likely to agree with the schemes of the reorganization committee; this latter body also has plans, but at the offices of Joline, Larkin & Rathbone, 54 Wall street, counsel for the reorganization committee, Henry V. Poor, a member of the firm, said yesterday (Wednesday) that it will be a week or ten days before things really will begin to move.

"Protector" Bond, however, evidently is having troubles of his own in getting in touch with the stockholders, for while he has heard by letter from quite a number in different parts of the country, there being some 1,100 in all, he has heard from but one in New York City where they are said to be quite numerous. The lone New Yorker who responded made a frantic dash into Bond's office when he saw one of Bond's advertisements; he was a French hotel waiter from the neighborhood of 40th street, and the mystery of why waiters are loath to see the tipping habit abolished may be somewhat cleared by the size of the Frenchman's holdings; he is the possessor of 99 shares of preferred and 250 shares of common stock. Of course this stock costs little on the market today, but it once sold for real money.

"Just what our plans are I do not feel at liberty to make public," said Bond to a Motor World man. "I am getting reports from stockholders regularly, and hope soon to be able to announce our plans. As to the relations between our proposal and that of the creditors' committee, I do not think they will agree. So many of the New York people who hold stock are out of town that it has helped delay matters."

Mack Finally Enters Lansden Company.

J. M. Mack, of Allentown, Pa., on Tuesday last was elected chairman of the executive board of the Lansden Co., of Newark, N. J. At the time of the reorganization of that company, about a year ago, it was reported that Mack, or some other officials of the International Motors Co., had acquired an interest, but the report could not be confirmed. Mack since has retired from the International corporation and now is devoting himself chiefly to the new Webb Co., which will manufacture motor fire apparatus in Allentown. His election as chairman of the Lansden executive board will relieve considerably R. S. Holtz, the president of the company, who resides in Chicago, and who, therefore, has not been well situated to devote himself closely to the duties of his office. Mack's entry into Lansden affairs also implies developments in the line of electric vehicles

Car Maker Sued on Curtain Patent.

Suit in equity has been filed in the United States District Court in Peoria, Ill., by the Jiffy Auto Curtain Co., of Chicago, against the Midland Motor Co., of Moline, Ill., for alleged infringement of the Jiffy patents. The infringement complained of consists of the use by the Midland company of a top which is claimed to violate the Jiffy patent.

San Francisco Garagemen Organize.

The garage owners of San Francisco finally have seen the benefits of co-operation, and to secure them have organized an association with the following officers: President, J. B. Kelly, Kelly Garage; vice-presidents, G. F. Chapman, Acme Garage, and J. C. Bowman, Pine Garage; secretary-treasurer, Arthur D'Ettel, Auto Service Co.

Flanders Meeting is Again Postponed.

For the second time, the special meeting of the stockholders of the Flanders Mfg. Co., of Pontiac, Mich., which was due to occur yesterday and at which an issue of mortgage bonds was to be considered, has been postponed, this time without date; necessary details have not been completed.

To Make Motor Plows in Oklahoma.

To manufacture a motor plow, the J. B. Wood Plow Co. has been organized in North Muskagee, Okla., and has been incorporated with authorized capital of $300,000. It is stated that the erection of a two-story stone factory, 191 x 101 feet, immediately will be undertaken.

WEBB-MACK FIRE ENGINE DEAL IS COMPLETED

New Company With $1,500,000 Capital Takes Hold and Plant in Allentown Being Equipped—Men Who Will Manage It.

Having completed the last detail, the Webb Co., of Allentown, Pa., which is the title of the new corporation which took over the Webb Motor Fire Apparatus Co., of St. Louis, Mo., is moving the equipment of the factory from St. Louis to Allentown and preparing for actual production in the latter city; in fact, a large part of the equipment already has been installed, and the new interests represented have assumed control.

Chief of the new men, as already is known, is John M. Mack, formerly of the Mack Bros. Motor Co., of Allentown, who became a vice-president of the International Motors Co. when the latter took over the Mack property. Having disposed of all of his International holdings and disassociated himself with that corporation, Mack has been elected treasurer of the new Webb Co., the president of which is A. C. Webb, the former head of the Webb Motor Fire Apparatus Co. George E. Blakeslee, of Jersey City, N. J., one of the veterans of the automobile industry, who was associated with Mack in the Mack Bros. and International enterprises, is vice-president, and W. J. W. Groves, a former Mack Bros. man, is secretary.

The active direction of the Webb Co., however, will be in the hands of Roland Carr, who has been appointed general manager. He is a new man in the automobile trade, but acquired a reputation in the course of many years as manager of one of Butler Bros.' eastern establishments. Harry Von, previously identified with the International corporation, will be superintendent of the Webb plant.

An office has been opened in New York City, but, contrary to reports, it will not be the general sales office. The sales department will be a part of the Allentown establishment and will be in charge of President Webb himself.

The Webb plant in Allentown comprises what was formerly the Allentown Foundry. It includes three buildings, one, 300 x 52 feet, having two wings, another, 325 x 100 feet, and a third, 60 x 75 feet.

While it is possible that ultimately other vehicles will be produced, for the present the Webb output will comprise two styles of pumping engines, a chemical engine and an aerial ladder truck. These will be

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pushed with vigor, a cash investment of $560,000 making possible the development of all departments of the business.

The Webb Motor Fire Apparatus Co. was a $300,000 corporation. Its successor, the Webb Co., which is incorporated under Delaware laws, is capitalized at $1,500,000, of which $600,000 is represented by preferred shares.

Repairman-Insurance Adjuster Is Sued.

Even though Walter H. Stearns once did a good business on West 51st street, New York City, as a repairman and insurance adjuster, the left over ends of his business are not proving as pleasant as he might wish; for although the New York branch of the Couple Gear Co., of Grand Rapids, Mich., spent a year in getting service on Stearns, he finally has been made defendant in the New York City Court in an action for the recovery of $397.65. Stearns is asked to pay for parts and the time of an employe from the Couple Gear factory who came to New York to assist on a repair job done by Stearns. Stearns, as insurance adjuster, adjusted a damage claim for the Curtiss-Blaisdell Co., which owned a Couple Gear truck, and then, as repairman, undertook to repair the truck. It was in this latter capacity that the alleged indebtedness was incurred. Stearns in his answer sets up a general denial, but states that if any such thing did occur the Walter H. Stearns Co., an incorporation, is the debtor.

Two Dealers Garnishee Hearne's Deposits.

Although all the parties directly concerned are residents of Illinois, two suits have been instituted in the Circuit Court for Wayne county in Detroit, Mich., against the Hearne Motor Co., of Chicago, by the Reliance Motor Co. and W. C. Lumpkin, doing business in that city as the Mattoon Motor Car Co. The Reliance company seeks to recover $2,250, the amount of deposits made on cars ordered from the Hearne company and not delivered, while Lumpkin asks for $1,605.21 on a claim of the same kind. The suits were brought in Michigan so that the plaintiffs could garnishee the amounts due the defendant from the Hupp Motor Car Co., of Detroit. The latter has filed a disclosure in each case, showing an indebtedness by it to the defendant amounting in all to $1,428.76.

Remy Erecting Two More Buildings.

Ground has been broken by the Remy Electric Co. for two additions to its plant in Anderson, Ind. The new structures, which will be completed within three weeks, will provide 10,600 additional square feet of floor space.

KELLY'S WARM RETORT IN HUBER PATENT SUIT

Declares Invention "Worthless for Any Useful Purpose" and Denies Exclusive Ownership—Cites Long List of Prior Patents.

If the North American Vehicle Co., of Detroit, truly is seeking to test the Emil Huber three-point suspension patent, No. 788,407, which it has brought to bear on the trade, its desire is in a fair way of being gratified. The fact that two previous suits instituted against motor car manufacturers had been settled by the issuance of licenses to operate under the patent has not in any way influenced those who stand behind the Detroit Taxicab & Transfer Co., which also has been made defendant in a suit for infringement brought by the North American company. This action really is directed against the Kelly Motor Truck Co., of Springfield, O., whose vehicles are employed by the Taxicab & Transfer Co., and the answer which has been filed in the case makes plain the Kelly disposition to fight.

In addition to the usual formal and categorical forms, the defendant denies that it received notice of alleged infringement, or that it has disregarded such notice or refused to desist from alleged infringement. It also sets up that the Huber invention lacks inventive skill and is "wholly inoperative and worthless for any useful purpose." In support of its allegation that Huber was "not the original and first inventor or discoverer of the invention, or of any material or substantial part thereof," the Detroit Taxicab & Transfer Co. cites a long list of United States patents. The earliest, No. 183,970, was granted to L. Ransom, October 31, 1876, while the most recent, No. 810,379, was granted to H. M. Pope, January 16, 1906.

Among other things, the defendant denies that the North American Vehicle Co. is the sole and exclusive owner of the Huber patent, or of "any right and privileges intended to secure thereby," or that it has "invested or expended large sums of money or has been put to any great trouble or expense."

The Huber patent bears date April 25, 1905, and, as exclusively stated in the Motor World at the time the litigation was instituted, is claimed to cover "any driving mechanism of an automobile wherein the parts that go to make up the same are brought together in what is termed a unit power plant, suspended at three points upon the main frame, and wherein one of the points forming the triangle is arranged to swivel."

Million Dollars for Policeman's Tire!

A policeman's lot may not be a happy one, but if the tire which he has invented pans out as he anticipates, Arthur J. Elliott, a member of the Cleveland (O.) police department, may exchange the lot of a policeman for that of a millionaire. Elliott has interested the Standard Sales Co., of Cleveland, in his invention, which, according to local prints, has announced that it will build a "million dollar factory" to manufacture Elliott's tire. According to the same sources, "there is plenty of money back of the proposition." In the words of the general description which has been vouchsafed, "Elliott's tire is oval in shape and is so reinforced with steel that it is impossible to puncture it." Also it can be sold at 25 per cent. less than the automobile tires now on the market.

Goodyear Plant Still Being Enlarged.

Of additions to the Goodyear Tire & Rubber Co.'s plant in Akron, O., there appear no end. What is known as the No. 6 building, a six-story structure, 403 x 80 feet, is now in a fair way of completion, and meanwhile excavation has been made for a new five-story building, 250 x 50 feet, and for an extension, 325 x 40 feet, of building No. 14. It is expected that work on the three structures will be completed by the end of the year. In addition, there just has been completed a new and imposing building, 126 x 50 feet, and adjacent thereto a two-story garage, 143 x 56 feet, is in the last stages of completion.

Los Angeles Vulcanizers Get Together.

Tire vulcanizing establishments are not lacking in any part of the country, but on the Pacific Coast they are so unusually prolific as almost to astonish visitors from the eastern half of the country. In Los Angeles they are so numerous that the owners have formed an association with the following officers: President, James A. Alcorn, Alcorn Rubber Co.; vice-president, L. Shurley Freeze, Mosher Rubber Co.; treasurer, L. F. Phelps; secretary, Wiley Jackson, Jackson-Eno Rubber Co. The organization aims to conduct a credit bureau and to maintain a consistent tariff for vulcanizing work.

May Build Wagons in Asbury Park.

The Croce Automobile Co., of Asbury Park, N. J., has purchased a site, 100 x 125 feet, on Railroad avenue in that city, on which, it is stated, will be erected a two-story concrete factory building. Motor wagons and sight-seeing cars will constitute the principal productions.

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The Week's Incorporations

Dover, Del.—Imperial Garage Co., under Delaware laws, with $25,000 capital; to operate a garage.

Wichita, Kan.—Jones Auto Co., under Kansas laws, with $10,000 capital; to deal in motor cars. Corporators—J. J. Jones and others.

Portland, Me.—Fiber Products Co., under Maine laws, with $1,000,000 capital; to manufacture fiber products. Corporators—E. B. Cook, E. C. Fisher.

deal in motor cars. Corporators—S. L. Henderson, J. S. Allison, George S. Allison.

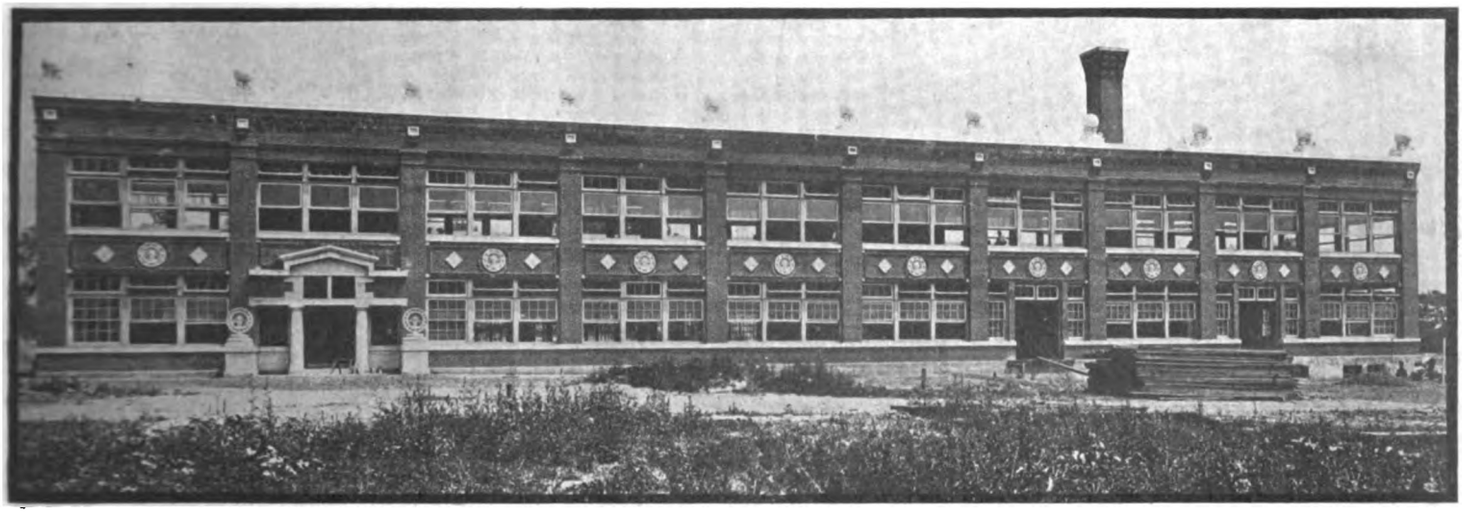
St. Louis, Mo.—Lewis Automobile Co., under Missouri laws, with $16,000 capital; to deal in motor cars. Corporators—J. D. Lewis, Walter H. McLean, John H. Jackson.

Wilmington, Del.—Lilge Gas Rotary Engine Co., under Delaware laws, with $1,000,000 capital; to manufacture motors. Carl J. Metzger, Roy A. Herrington, Ben F. Brady.

Newark, N. J.—John R. Price, Inc., under New Jersey laws, with $100,000 capital; to manufacture internal combustion motors. Corporators—John R. Price, G. W. Knorr, H. E. Price.

Indianapolis, Ind.—Corydon, New Albany, & Greenville Auto Bus Co., under Indiana laws, with $2,100 capital; to operate a motor bus line. Corporators—James

FIRST LINK IN THE RECONSTRUCTION OF THE HESS-BRIGHT PLANT IN PHILADELPHIA



The new building which forms the nucleus of a much larger plant which eventually will be erected, is at the corner of Front street and Erie avenue and measures 200 x 235 feet. At present the building is used only for repair work and for manufacturing the new Hess-Bright double row bearings.

Detroit, Mich.—Currier Auto Co., under Michigan laws, with $6,000 capital; to deal in motor cars. Corporators—M. S. Gorden, L. A. E. Gorden, L. G. Currier.

Freeport, Ill.—Overland Automobile Co., under Illinois laws, with $10,000 capital; to deal in motor cars. Corporators—W. J. Maurer, G. E. Maurer, F. W. Boettcher.

Houston, Tex.—Havoline Auto Supply Co., under Texas laws, with $10,000 capital; to deal in motor car supplies. Corporators—F. E. White, Edwin Hobby, J. W. Crotty.

Paterson, N. J.—Standard Garage Co., under New Jersey laws, with $25,000 capital, to operate a garage. Corporators—Martin While, Susan B. White, Oscar Harris.

San Angelo, Tex.—S. L. Henderson Co., under Texas laws, with $10,000 capital; to

Corporators—L. E. Lilge, G. P. Lilge, I. Fogg.

Chicago, Ill.—National Radiator Co., under Illinois laws, with $30,000 capital; to manufacture automobile radiators—Percy W. Sullivan, Theodore Schmidt, Edward A. Gramms.

Fond du Lac, Wis.—S. C. Wells Mfg. Co., under Wisconsin laws, with $200,000 capital; to manufacture ignition devices. Corporators—R. C. Wells, L. J. Fuhrman, F. J. Rueping.

Augusta, Me.—Mathiessen Spring Cushion Wheel Co., under Maine laws, with $60,000 capital; to manufacture spring wheels. Corporators—R. S. Bussell, L. J. Coleman.

Chicago, Ill.—Metzger-Herrington-Argo Co., under Illinois laws, with $50,000 capital; to operate a garage. Corporators—

M. Ferguson, Henry E. Rohling, and others.

Chicago, Ill.—South Park Automobile Garage Co., under Illinois laws, with $25,000 capital; to operate a garage. Corporators—Herman Frank, Harry Lurie, John A. Anderson.

Harrisburg, Pa.—Economy Tire & Rubber Co., under Pennsylvania laws, with $5,000 capital; to deal in motor car tires. Corporators—Edward L. Kroft, B. F. Knupp, E. M. Knupp.

Rochester, N. Y.—Lamax Mfg. Co., under New York laws, with $25,000 capital; to manufacture motors, etc. Corporators—Arthur B. Bradley, Philip E. Tucker, Arthur C. Lamay.

Camden, N. J.—Hub Twenty-second Street Garage Co., under New Jersey laws, with $100,000 capital; to operate a garage.

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Corporators—F. R. Hansell, George H. B. Martin, L. C. Clow.

Chicago, Ill.—Automobile Accessories Co., under Illinois laws, with $25,000 capital; to deal in motor car accessories. Corporators—Alexander Meralli, Frederick L. Jackson, Frank D. Merolli.

Portland, Me.—National Chauffeurs' Association, under Maine laws, with $500,000 capital; to conduct a mutual benefit organization. Corporators—Albert F. Jones, T. L. Croteau, B. M. Marshall.

Portland, Me.—Reliance Speedometer Co., under Maine laws, with $100,000 capital; to manufacture speedometers. Corporators—Charles M. Drummond, G. M. Howes, Wadleigh B. Drummond.

New York, N. Y.—Mercedes-Daimler Selling Corporation, under New York laws, with $50,000 capital; to deal in motor cars. Corporators—A. M. Becker; John A. Lemline, E. H. Ferguson, all of 27 William street.

Chicago, Ill.—Automobile Inspection & Appraisement Bureau, under Illinois laws, with $2,500 capital; to inspect and appraise motor cars, etc. Corporators—James C. Johnson, Charles W. Barton, Thomas B. Convey.

Cleveland, Ohio.—Northern Ohio Automobile Racing Co., under Ohio laws, with $1,000 capital; to promote automobile racing. Corporators—Richard Lee, Florence Cawood, John Alburn, N. E. Weffler, Fred Hackley.

St. Louis, Mo.—Kaufmann Motor Tire Co., under Missouri laws, with $15,000 capital; to deal in motor car tires. Corporators—George H. Muehling, Norman Sadler and others.

New York, N. Y.—Motor Gear Improvement Co., under New York laws, with $1,250,000 capital; to manufacture motor car parts. Corporators—Henry C. Derham, 2d, S. V. Brady, Dwight Partridge, all of 250 West 54th street.

New York, N. Y.—Auto Despatch Bureau, Inc., under New York laws, with $25,000 capital; to operate a motor service. Corporators—Walter Stackhouse, 195 Lexington avenue; Harold Parker, L. S. Parker, both of 55 Liberty street.

Anderson, Ind.—Fraternal Order of Honk-Honks, under Indiana laws; to promote sociability among motor car dealers. Corporators—John Stockdale, Chicago, Ill.; Richard D. McCain, Harry F. Dunn, George McMahon, all of Anderson.

New York, N. Y.—Hunt & West, Inc., under New York laws, with $10,000 capital; to deal in motor cars. Corporators—Burton R. Law ,206 West 106th street; John W. Collopy, Jr., 10 Wall street; Elly Z. Parker, 470 West 146th street.

New York, N. Y.—Cameron-Rowe Auto Service, Inc., under New York laws, with $10,000 capital; to operate a motor car service station. Corporators—James Cameron, Norman Cameron, both of 203 West 107th street; August T. Rowe, 239 West 107th street.

New York, N. Y.—Miller, Hicks & Hewitt, Inc., under New York laws, with $10,000 capital; to deal in motor cars. Corporators—Harry D. Miller, 509 West 56th street; Henry T. Hicks, 441 West 124th street; George A. Hewitt, 370 East 183d street.

New York, N. Y.—New York Garage Association, Inc., under New York laws, with $2,000 capital; to conduct a general garage keepers' exchange. Corporators—Charles H. Potter, 154 West 124th street; Louis J. Joscelyn, 112 West 52dd street; William Burrows, 69 East 89th street.

Change of Corporate Name.

Jackson, Mich.—Clark-Carter Automobile Co. to Cutting Motor Car Co.

Washington, D. C. Auto Exchange Co. to Washington Motor Car Equipment Co.

Change of Name and Capital.

Dover, Del.—Everitt Motor Car Co. to Flanders Motor Co., and capital increased from $3,000,000 to $3,750,000.

Changes Among Prominent Tradesmen.

Fred G. Bremer has resigned as manager of the Twitchell Gauge Co., of Chicago. He has been succeeded by Max D. Bendel.

Lyle Miller has resigned as factory superintendent of the Midland Motor Co. at East Moline, Ill. His successor has not yet been named.

Hugh S. Quinn has been appointed manager of the Abbott Motor Co.'s retail branch in Detroit, his appointment being in the nature of promotion. He succeeds E. C. Thompson, resigned.

George N. Matheson has been appointed purchasing agent for the Hayes Mfg. Co., of Detroit. Previously, and for many years, he occupied a similar position with the National Motor Vehicle Co., of Indianapolis.

S. H. Humphries has been appointed factory manager of the Oakland Motor Car Co., of Pontiac, Mich. Until his appointment he was connected with the Elmore Mfg. Co., at Clyde, O., but for many years previous thereto he had been associated with the Peerless Motor Car Co. and the Brush Runabout Co., respectively.

Frank H. Trego, former chief engineer of the E. R. Thomas Motor Co., of Buffalo, has been appointed manager of the department of research engineering for the Packard Motor Car Co., of Detroit. Before he joined the Thomas staff, Trego was manager of the technical department of the Hudson Motor Car Co., in Detroit.

C. W. Eggers, who for the past two years has been traffic manager for the Willys-Overland Co., in Toledo, O., has been appointed general traffic manager for all of the Willys properties—the Willys-Overland Co. in Toledo, the Garford Co. in Elyria, the Gramm Motor Truck Co. in Lima, the Federal Motor Co. in Indianapolis and the Morrow Mfg. Co. in Elmira.

Cole Names Managers for Five Districts.

In order to better handle its business and keep in closer touch with its dealers, the Cole Motor Car Co., of Indianapolis, has divided the country into five districts, each of which will be in charge of a district sales manager, none of whom is an apprentice. William L. Colt, president of the Colt-Stratton Co., of New York, will be in charge of the territory east of a line drawn north from Washington, D. C., to Syracuse, N. Y.; E. C. Frady of the Cole Motor Co., of Chicago, will handle the North Central States; George H. Strout, former Apperson sales manager, will have jurisdictioin in the southeast and part of the Middle West; C. J. Corkbill, also a former Apperson man, will handle the territory bounded by the Mississippi on the east and the Rockies on the west; and J. R. Moler will have charge of all of the extensive territory lying west of the Rocky Mountains, and also the entire Dominion of Canada.

Stearns Locates Branch in Philadelphia.

The F. B. Stearns Co., of Cleveland, has taken over its agency in Philadelphia and hereafter will maintain it as a factory branch at 449-451 North Broad street. It will be in charge of C. Hilton Gantert, who for the past six years has been identified with the Stearns car in that city. The Stearns service bureau, which previously was maintained in Philadelphia, also has been made a part of the new branch.

Texan Forms a Tire Filling Company.

The Nopatch Tire Filling Co. has been organized in Fort Worth, Tex., to produce a tire filling compound originated by J. A. Reynolds, of that city, in which it is stated a plant has been established. The company has been incorporated with $110,000 capital stock and has opened a sales office in Dallas.

New Departure Factory to Expand.

The New Departure Mfg. Co. has let contracts for an addition to its plant in Bristol, Conn. It will be a three-story fireproof structure, 62 x 215 feet.

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In the RETAIL WORLD

Joseph Wechtel is about to build a garage in Sibley, Ia.

Edward Warner is building a two-story garage in Ludlow, Vt.

Hugh Lucas, of Blue Earth, Minn., has sold his garage to J. J. Strack.

John Dyer, of Madera, Cal., is building a garage at Cosemite and F streets.

Pruitt & Jorgenson, of Granville, N. D., have purchased the Granville Garage.

Frank Richardson, of Gilman, Ia., has sold his repair business to Roy Poper.

Edward Bean has opened a garage in New Haven, Conn., on Columbus avenue.

A new garage has been built in Union Hill, N. J., by the Clifton Automobile Co.

C. M. Mather, of Clarksville, Ia., plans to erect a garage; he already has secured a site.

Garretson & Hoyt, of Fayette, Ia., are about to open a garage in Lancing, in the same state.

Fred Redezke, of Hebron, N. D., has bought the garage and repair business of E. H. Mann.

John C. Oliger, of Pittsburgh, Pa., is about to secure bids on a two-story and basement garage.

J. L. Tippins is about to establish a tire repair business in Savannah, Ga., at 408 Broughton street.

Coy Swift and Charles Larson are about to open an automobile and bicycle repair shop in Spencer, Ia.

Dell Hutchings, of Rockford, Ill., has "gone into" automobiles; he has signed up as Paige-Detroit dealer.

Simon Westra and Edward Van Woudenburg have purchased the Parkinson Garage in Rook Valley, Ia.

Hicks Auto Supply Co. is the style of a new business in Nashville, Tenn. It is located at 802 Broadway.

Plans have been prepared for a garage which Jacob Hagin will erect on Rahway avenue, Elizabeth, N. J.

A. G. McClary is having plans prepared for a garage which he will erect on Clinton street, in Defiance, O.

E. F. Tabor plans to construct a garage in San Francisco; it will be located on Valentine street near 26th.

Paul Luge and Joseph Poiser have established a repair business in McKeesport, Pa., at 719-23 White street.

Michael L. Joy is having plans prepared for a brick and concrete garage which he will erect in Putnam, Conn.

S. C. Fertig, of Titusville, Pa., has secured permission to build a garage at Central avenue and Martin street.

L. F. Case, of Elkhart, Ind., has purchased the interests of his partner, J. S. Landon, in the Landon Garage.

Eddy Bros., who have been in the trade in Marengo, Ia., are about to open a garage in Fort Dodge, in the same state.

Allen Baker, well known in motor truck circles in St. Louis, Mo., has taken the Dayton truck agency in that city.

E. B. Luder, formerly of Kyrle, Tex., is about to establish an automobile business in San Antonio, in the same state.

F. F. Anderson, of Coon Rapids, Ia., has bought the Henry Garage; he will improve the premises and continue the business.

Nels Narveson and W. A. Childress have started a repair shop in Mason City, Ia. The style is Mason City Vulcanizing Co.

John Lang, of Richmond, Minn., has purchased a building and will remodel it for a garage; he plans to open up in the spring.

The Akron Tire Co., of Philadelphia, Pa., has opened a branch in Washington, D. C., at 1024 14th street; N. A. Brandriff is manager.

The Ellis Motor Car Co., in Greenville, S. C., has been reorganized. Charles Ellis is president and A. G. Dale general manager.

C. W. Plain is organizing a stock company in Milton, N. D., to enter the selling field; he has the state agency for the Cartercar.

Harold E. Wolcott has entered the trade in Joliet, Ill. He has the Cadillac agency and will conduct his business at 100 Cass street.

The W. E. Allen Co., of Milwaukee, Wis., plans the erection of new showrooms on Grand avenue between 27th and 28th streets.

Ralph Smalley, of Woolstock, has purchased an interest in the Eagle Grove (Ia.) Auto Co. He will also handle the Overland line.

The Waggoner Garage in Litchfield, Ill., has been sold to Glenn Brubaker; Stanley Waggoner, the former owner, will go to California.

E. E. Cline has secured an interest in the firm of Franks & Merchant in Canby, Minn. A new garage and piano salesroom will be built.

Dr. F. L. Darrow, of Front street, Columbus, O., has commenced the construction of a two-story garage; it will be completed October 1.

Austin Bros., of Sioux Falls, S. D., have purchased E. E. Faubion's blacksmith shop in Ryder, N. D. Besides conducting it they will add a garage.

Llanerch Garage is the style under which a new business will soon be opened in Philadelphia, Pa., at Cooperstown road and West Chester pike.

A three or four-story brick and terra cotta garage is to be built on Highland avenue, Pittsburgh, Pa., for William D. Laird; it will cost $50,000.

John Pitka and E. E. Harlan have purchased the interests of Clinton Fosnacht and L. L. Hufford in the National Auto Specialty Co., of Tama, Ia.

S. E. Dilbone, of Hardin, O., is about to establish an accessory business in Sidney, O. He will occupy the building formerly used by the Robinson Garage.

The Standard Oil Co. is about to build a garage and offices in Chicago at 5810-12-14 Grove street; the building will be one-story in height and will cost $10,000.

J. J. Smith, of Crockett, Cal., is building a one-story garage building in Valona, in the same state; when completed it will be occupied by Antonoe Dowrellio.

E. R. Roehl, of Lewiston, Mont., has "gone into" automobiles and will have his salesrooms in the garage of the Lewiston Auto Co. He has the Ford agency.

Permission has been granted to Mary Siebeck, of Seattle, Wash., for the erection of a three-story concrete garage at 1100-06 East Pike street; it will cost $18,000

Bonnewitz Bros., of Toledo, O., are having plans prepared for a garage; it will be erected on the site of the Bonnewitz block

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which was destroyed by fire a few years ago.

The Heimsch Automobile Co., of St. Louis, Mo., has purchased a site on Grand avenue and will erect a concrete garage and repair shop; the building will cost $30,000.

J. C. Sondles, of Greensburg, Pa., is about to sell his horse livery business and enter the garage trade; he will erect a concrete and steel structure for his new venture.

The garage heretofore operated in Saginaw, Mich, by the Olds Motor Works, of Lansing, Mich., has been taken over by T. W. Greve; he also has the Oldsmobile agency.

The Overland Sales Co., of Cleveland, O., has purchased a site on East 22d street, south of Prospect avenue, and will erect thereon a three-story sales and service building.

J. R. McIntyre, of Los Angeles, Cal., has let the contract for a garage which will be erected on Hollywood avenue; its cost will be $6,000.

George B. Fink is about to establish an agency in Syracuse, N. Y., at 215 James street; he will sell Kissel and White cars and trucks.

Charles Wedding, of Jerseyville, Ill., has purchased the interests of his partner, Clarence Heidscheid, in the firm of Wedding & Heidscheid; Wedding will continue alone.

Harry Welland, proprietor of the Marathon Motor Car Co., of Cincinnati, O., is about to build a one-story salesroom building; it will be located at Gilbert and Florence avenues.

George L. Gasier has purchased property in Niagara Falls, N. Y., opposite the Cataract Hotel, and will erect a garage; it will represent an expenditure of $50,000. The site cost $15,000.

Roy Clark, of Salina, Kan., has sold his garage to A. J. Cleveland and H. A. Brownley, of Minneapolis, Minn. They will remodel it at a cost of $1,500 and will continue the business.

Frank Freund, George Frank and Edwin Frank have purchased the Island City Garage at 2322 Post Office street, Galveston, Tex. The style has been changed to New Island City Garage.

Permission has been granted to W. D. Nellis, of Watertown, N. Y., to erect a two-story garage; it will be opposite his store on Jackson street, and will be ready for occupancy December 1.

The Hailey (Ida.) Auto Co. has been reorganized and henceforth will be operated under the style Fowler, Stimson & Furcht Auto Co. The new men in the company are Fowler and Stimson, of Grand Forks, N. D.

H. T. Moore and Ira T. Blakely have leased the Hickland Street Opera House in Princeton, Ill., and will remodel it into a garage; they also will be agents for several different makes of cars.

A. F. Shallberg is about to open an electric garage in Moline, Ill., at 1521 Library avenue; it will be the first exclusively electric garage in that city. Shallberg handles the Rauch & Lang line.

Maus Bros., automobile and piano dealers in Lima, O., has dissolved partnership; H. P. Maus, however, will continue the piano end of the business. A. D. Maus, the other partner, has removed to Arkansas.

The Robertson Tire & Auto Co. has opened up at 1920 Fourth avenue, Birmingham, Ala. W. W. Robertson is manager and associated with him are J. E. Vandergriff and E. R. Minhinnette. Cole cars are stocked.

C. A. Kellogg and J. M. Taggart have bought the repair business of Morrison & Dains in Mount Pleasant, Mich. The business will be moved from its present location on South Main street to 220 East Broadway.

Dr. D. F. Howard, as president, and R. S. Brownlee, as secretary and treasurer, are principals in a new stock company in Brockfield, Mo. They will operate a garage at West Boston and Livingston streets. The capitalization is $10,000.

J. Ceaser, of St. Louis, Mo, has purchased of William Miller, Charles Marquiss and Clarence Glazier a half interest in the Palace Garage in Webb City, Mo. The new member of the firm plans to add to the equipment and scope of the business.

Frank D. Pierce, of Helen, Wash., proprietor of the Silver Bow Auto Co., in Butte, Mont., is about to open another business in Spokane, Wash. He has the Stevens-Duryea agency and will locate in the Pacific Motor Car Co.'s garage at Fir and Maple streets.

The Maurer Garage Co., of Sheboygan, Wis., has been dissolved, and its business taken over by a new corporation, the Sheboygan Auto & Supply Co., of which the incorporators are C. F. Kade, Caroline F. Thieman and Felix Benfry; Carl Kade and Robert Thieman will manage the business.

What will be known as the Georgian Terrace Garage is being constructed adjoining the Georgian Terrace Hotel in Atlanta, Ga., for the accommodation of tourists; it will be three stories in height and will have offices, reading rooms, sleeping rooms and a hospital for employes and chauffeurs.

Peavey Rubber Co. is the style of a new concern which has opened up in Dallas, Tex., at 1505 Commerce street, as Texas and Louisiana agents for Kelly-Racine tires. The firm is composed of R. A. Peavey, a former Morgan & Wright representative, and N. P. Deavours and E. W. Ware, both of whom were connected with the United States Tire Co for ten years.

Overland Motor Car Co. is the style of a newly organized company in Davenport, Ia. As its name indicates, it will handle the Overland line. The officers are: President, Henry Bierkamp, of Durant, Ia.; vice-president, Henry Meyer, of Long Grove, Ia.; secretary and treasurer, M. Foy, of the Foy Supply Co., of Cedar Rapids, Ia.; general manager, G. H. Knowles.

The Landman-Griffith Motor Co. has been formed in Toledo, O., and will build a $25,000 sales and service building, 100 x 40 feet, at 14th street and Madison avenue; the structure will have its entire front of glass, affording ample display facilities, and will be completed December 1st. Charles P. Landman, who formerly was vice-president of the Blevins Automobile Co., is president, and W. E. Griffith, a former Blevins salesman, is secretary and treasurer. The capitalization is $10,000.

Fresno Dealers Form an Association.

The Fresno (Cal.) Automobile Dealers' Association has been formed with the following officers: President, Chas. W. Cobb; vice-president, George S. Waterman; secretary, Ernest Johnson; treasurer, C. W. Hobson. In addition to the president and vice-president, the executive committee embraces G. E. Gray, J. F. Gurley, H. B. Odell, W. Scott, Ernest Johnson.

Recent Losses by Fire.

Turon, Kan.—Union Motor Co., destroyed. Loss, $8,000.

New Rockford, N. D.—Motor Co., garage and four cars destroyed. Loss, not given.

Philadelphia, Pa.—J. F. Brinton, Highland Park, garage partly destroyed. Loss, $25,000.

Charlotte, N. C.—Mecklenburg Auto Co., Fifth and Graham streets, garage destroyed. Loss, $7,500.

Lewiston, Pa.—Robert Fleming, garage, machine shop and eleven cars destroyed. Loss, $15,000.

Locomobile Branch Opened in St. Louis.

The Locomobile Co. of America has established a branch in St. Louis at 3053 Locust street. It is in charge of A. L. Elwood, who formerly was identified with the Locomobile branch in Chicago.

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THE MOTOR WORLD

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F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor

S. P. McMINN HOWARD GREEN
R. W. SHERMAN E. F. HALLOCK

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Advertising Manager
HOWARD L. SPOHN LOU McDOWELL

WESTERN ADVERTISING MANAGER
W. H. TRIPP, Park Building, Cleveland, Ohio
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DETROIT, 1001 Ford Building CHICAGO, 1441 Monadnock Block
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HELP SOLVE THE USED CAR PROBLEM!

If you are interested in the well being of the industry, you are interested in the problem of the used car. It long has been the most serious difficulty that has confronted the dealer; and signs are not wanting that it will become even more serious. Anything that assists its solution, or lessens the evil, is in the nature of promoting the well being of the whole trade; for what affects the dealer affects the manufacturer in corresponding ratio. The problem can be solved only by a free interchange of ideas. To quicken the interchange, the Motor World has offered premiums of $50, $25, $15, $10 and $10, respectively, for the best articles relating to the subject. Why not add your suggestion?

ROOM FOR THE ELECTRIC HEATER.

There is a fertile field for the elimination of waste in the electrical equipment of the modern automobile. Ever since the dry battery was eliminated and the magneto put in its place the waste of electrical energy has continued. Almost any magneto generates considerably more current than is actually required to fire the mixture in the cylinders in regular order; what is not used goes to waste. Of course, with the ordinary high tension magneto it is practically impossible to stop the waste. But where low tension magnetos are used and where one of the combination electric lighting and starting systems, or even a lighting system is employed, there are many ways in which the excess current can be put to useful work, and not the least important of these well might be in furnishing heat by way of increasing the comforts of winter motoring.

Already several manufacturers have seen the light and are marketing electric heaters that are neither expensive to purchase nor to operate Without going deeply into the matter, an electric heater is simple and easy to manufacture, it occupies small space, consumes little current, is practically indestructible and never requires attention. Furthermore it may be applied anywhere that fancy or requirement dictates and the degree of heat it supplies may be adjusted with a nicety that is obtainable with no other temperature raising device. That the electric heater is practicable for automobile use is evidenced by its presence on several makes of electric pleasure car where it is built into place and forms part of the equipment. But whether it is supplied by the car manufacturer, built into place, or whether it comes under the head of accessories, that the electric heater holds forth inducements is not to be denied.

KEEPING ACCESSORIES "FOR ACCOMMODATION."

Can anything better serve to illustrate the attitude of the garageman toward the accessory market than the remark of the New York garage owner that he kept a stock of accessories "as a matter of accommodation for his patrons?" Can anything better illustrate the manner in which Opportunity thus is turned away from the garageman's door, even at the very moment that he complains of the meagreness of his income?

In nearly all other lines of trade, the chief object of merchants is to attract prospective purchasers within their doors; they spend large sums for the purpose. Yet the garageman, and the automobile dealer, too, daily and without cost are in direct contact with such buyers and still they suffer them to go elsewhere when accessories are required. When they keep them at all, they too often keep accessories only as a "matter of accommodation," which means that they are sold only when they are called for.

Mildly expressed, it is a regrettable state of affairs; it lacks all the elements of modern merchandising. If goods are worth keeping in stock, they are worth displaying, and if they are worth displaying they are worth selling, and the only way to sell them is to bring them to the attention of those who use such wares.

The automobile dealer and the garageman should look alive before it is too late. As the Motor World many times has remarked, department stores in the large cities, and hardwaremen in the smaller towns, are laying hands on that desirable class of trade which, by all the laws of logic, belongs to those who naturally have to do with automobiles and automobilists.

SIGNS THAT INCREASE SALE OF GASOLENE.

Even in prosecuting the sale of gasolene there is room for display of the merchandising spirit. The man who conspicuously posts the sign, "Filtered Gasolene, 20 Cents per Gallon," or "Doubly Filtered Gasolene, 20 Cents per Gallon," is certain to attract many more customers and sell many more gallons of gasolene than the man across the street who displays the familiar "Gasolene, 20 Cents."

The difference may appear a mere trifle, but it is attention to trifles of the sort that usually distinguish the successful merchant from the unsuccessful one.

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GREAT SHOW OF RUBBER BUT TIRES ARE SCARCE

Exhibition in Grand Central Palace Proves Interesting and Instructive—But Automobile Goods Are Not Conspicuous.

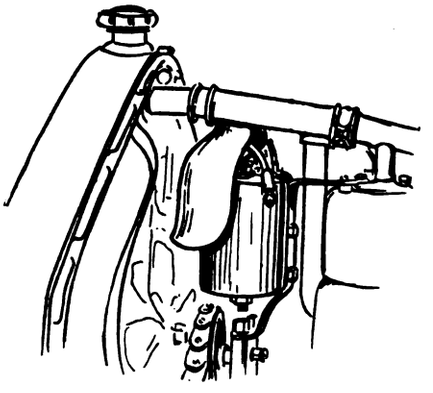
It is doubtful if there is a substance that is more peculiar or more mysterious in its origin and properties than rubber. To the layman it probably would be difficult to identify the crude material from the finished rubber products that are in every day use, for though there are abundant opportunities for becoming familiar with rubber in its commercial form, it seldom is exhibited in its raw state. At any rate there seldom is exhibited so great a quantity of raw rubber as there is on view at present in Grand Central Palace in New York City. It forms at least two-thirds of all there is to be seen at the Third International Rubber and Allied Trades exhibition, which was opened on Monday, 23d inst., and its value, according to various estimates, is upward of $400,000. The exhibition will be open until Thursday night next, October 3d, and in the meantime those who are interested in rubber can go to Grand Central Palace and see it and feel it and smell of it and taste it if they like.

There is rubber of every description and kind in every shape and form, from the crude latex as it comes from the Hevea trees to the finished rubber articles of commerce. But by far the greatest part of the exhibition is made up of raw rubber. It is shown just as it is collected by natives in the wilds (and cultivated places) of its origin; it is shown in bales and bundles and sheets; and some of the exhibition booths are ceiled and railed and floored with it. Brazil and Ceylon and a few other highly interesting and equally hot countries have whole sections devoted to the exposition of crude rubber, and at some of the exhibits it requires not much stretching of the imagination to see the natives actually at work collecting the precious juice, so realistic are the tropical forest scenes that are reproduced.

Despite the intimate connection between the rubber industry and the automobile industry, however, there is a noticeable absence of rubber products, such as are used in automobile construction, tires even being conspicuous by their poor representation. All in all, there are just exactly two exhibitors of automobile tires, the Home Rubber Co., of Trenton, N. J., which has on view about a dozen Home casings and tubes, and the Swinehart Tire & Rubber Co., of Akron, O., which exhibits a score or more commercial vehicle solid rubber tires and a representative line of pneumatics. Of course, the United States Rubber Co. is represented. It has the largest single space of any exhibitor, though, strange to say, there is not even a scrap of rubber in the big enclosure. Instead, the mahogany rails which fence the space serve also as receptacles for a number of carefully executed and mounted photographs and prints of the various tire and rubber goods factories subsidiary to the parent company.

Little Known Features of Well Known Cars

Removing accessories and other "impediments" from the dash opened the way for



CADILLAC COIL POSITION

the display of no small ingenuity on the part of motor car designers, none of which is more ingenious than the manner in which those who have to do with the designing of the Cadillac car have disposed of the ignition coils. Naturally the closer the coil or coils, as the case may be, are located to the cylinders, the shorter need the high tension cables be and the simpler become the problems of providing efficient insulation. Yet too close proximity with the heated cylinders, unless the coils be of special construction which admits of their working at temperatures considerably above normal, involves the destruction of the wax and resin insulation.

On the Cadillac car, which employs the well-known Delco ignition and starting system, which involves the use of current taken at low voltage from the generator and "stepped up" by means of a pair of transformer coils to a point where it is available for use in connection with the ordinary jump spark plug for ignition, the coil location is unique, in that although the coils are positioned adjacent the first cylinder, they never can be heated to a degree where the insulation is liable to suffer. As shown in the accompanying illustration, the coils are located on a bracket just ahead of the first cylinder and directly behind the fan, where the comparatively cool air which continually is drawn through the radiator precludes any chance of their overheating, and, in fact, maintains them at all times, while the motor is in operation, at a uniform temperature. By way of protecting the coils as well as the cables which are attached to them from mechanical injury through contact with tools, etc., a cast iron hood, held in place by the copper tubing through which the high tension wires are run, completely encloses the top of the coils.



September 28, Kalamazoo, Mich.—Track races promoted by J. A. Sloan.

September 28, Indianapolis, Ind.—Track races under the auspices of E. A. Moross.

September 29-30, St. Louis, Mo.—Track races promoted by the Universal Exposition Co.

September 30-October 1, New York, N. Y.—Sales Managers' Convention in the Automobile Board of Trade rooms.

October 2, Milwaukee, Wis.—Vanderbilt Cup road race over the Wauwatosa course, promoted by the Milwaukee Automobile Dealers' Association.

October 3, Milwaukee, Wis.—Pabst and Wisconsin trophy road races, promoted by the Milwaukee Automobile Dealers' Association.

October 4-5, Sioux City, Ia.—Track races under the auspices of the Sioux City Automobile Club.

October 4-6, Peoria, Ill.—Track races under the auspices of the National Implement Co.

October 5, St. Louis, Mo.—Annual reliability run of the Automobile Club of St. Louis.

October 5, Brooklyn, N. Y.—100-mile consistency run of the Long Island Automobile Club.

October 5, Milwaukee, Wis.—Grand Prize road race, promoted by the Milwaukee Automobile Dealers' Association.

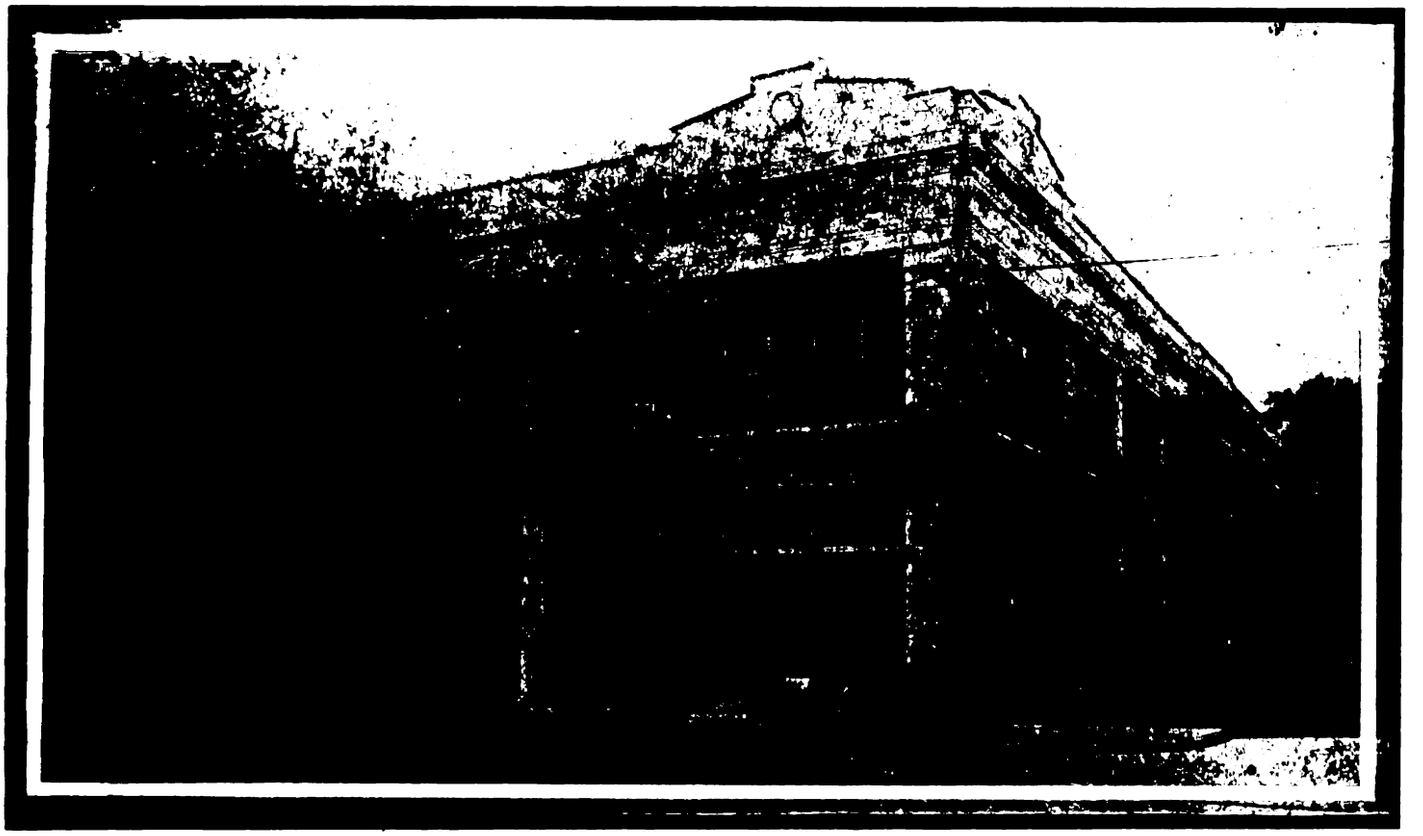
October 7-12, St. Louis, Mo.—Outdoor show in Forest Highlands Park, under the auspices of the St. Louis Automobile Manufacturers and Dealers' Association.

October 12, Providence, R. I.—Track races under the auspices of E. O. Hustudt.

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MODEL SALESROOM AND GARAGE TO INSTRUCT DEALERS

Building in Detroit to Be Equipped by Studebaker Corporation as an Example for Its Dealers—Ideal Window Display, Floor Arrangement, Repair Economy, Labor Saving Devices and Service to Be Exploited, While Branch Actively Conducts Business.



STUDEBAKER "OBJECT LESSON GARAGE" WHICH WILL HOUSE MODEL SALESROOM AND REPAIR SHOP

Instruction in selling has been a part of the more successful of those among the present day manufacturers of automobiles, and that the salesmen and dealers might know the car to best advantage and be given what knowledge of salesmanship the factory organization possessed, schools and similar schemes have grown up in connection with many shops where cars are built. Today, however, manufacturers are ready to concede that the increasing of efficiency in the dealers is a problem which merits attention and which is being studiously followed up by the progressive members of the trade.

Numerous plans have been adopted, but the majority get but little further than the sending out of dealers' literature which is designed to rouse enthusiasm in the medium between the factory and the public, and which is intended to keep the man in the field posted on latest development at the factory and most recent additions to the concern's selling points. Reading matter often is thrown aside unread and often a very properly raised question is that of the efficiency of this method.

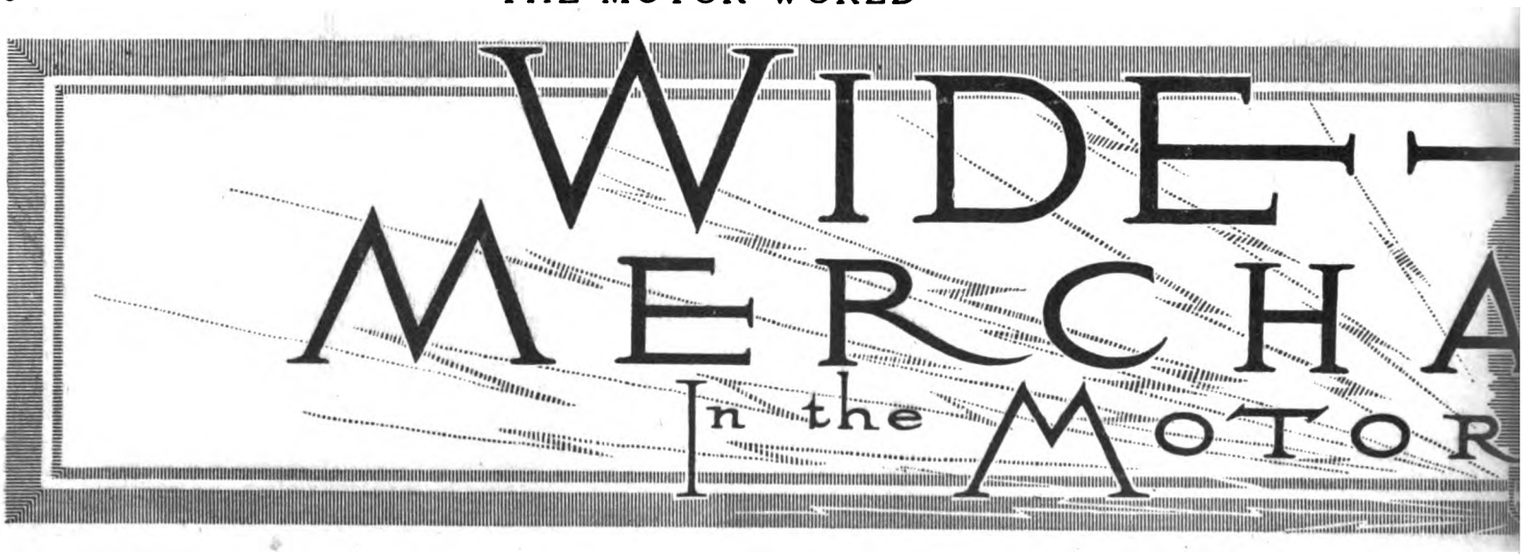
Marking an innovation in instruction, the Studebaker Corporation, of Detroit, Mich., has literally killed two birds with one stone, and while furnishing an establishment which will constitute its Detroit branch, it has arranged to present the branch as a model salesroom, garage and repair shop, that those who see it and who are inclined to improve their ways may "go and do likewise."

The building, which is located at Woodward and Charlotte avenues, was originally fitted up for the United States Motor Co. and was used by it as a Detroit branch; but the structure has been secured by the Studebaker Corporation, and extensive remodeling has been done, the building, however, admirably lending itself to this plan. Sales Manager Benson is father of the scheme.

The dealer who visits the Studebaker factory and who is escorted to the Detroit branch will see as he approaches a white tiled front which will glisten and gleam with spotless cleanliness. Inside the various divisions are laid out to best advantage, and every available form of labor saving device will be found. The window display is an object lesson in itself; special attention has been paid to floor arrangement; economy in repairing forms almost a special course of instruction, and—more important than all—there are forcible hints as to the proper definition of that much-abused term—service. While the great majority of dealers probably already have their garages constructed, the model is intended to furnish ideas for economy of operations and for improvement and to suggest plans in case new buildings are contemplated.

A. K. McLuney, formerly manager of branches for the General Motors Co., will be in charge of the branch and will also act in the capacity of instructor to the Studebaker dealers who visit the branch for a lesson in the best way to conduct their line of business.

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SYSTEMATIC WORK VITAL FEATURE OF GOOD SALESMANSHIP.

Know Why You Win, Know Why You Fail.

Good salesmanship means first of all work. And then more work and still more work. But it means organized work—planned work, carefully followed up work, continuous work that finally crystallizes into orders and profits.

The reason why more automobile dealers and salesmen don't succeed in larger measure is that they are not working to their limit. They are not planning intelligently and systematically for the use of every moment of their time in the accomplishment of their great purpose to sell automobiles and make money. Getting back to first principles, what is it that makes the wheels go round for dealer and manufacturer? Sales—Sales—Sales. That's what makes one concern more prosperous than another. With overhead established, rent the same, just as many cars to store, the same opportunities to sell gasolene, oil and sundries, good management established, few leaks between the stockroom and the cash drawer, the vital point that makes the difference between success and failure is **sales.**

Solve the Conundrum.

If you are dissatisfied with your business—don't seem to make as much money as you should—see others with apparently no greater opportunities than you, doing better, don't look for excuses, but forget the business for a day or two and **take the opportunity to thoroughly study yourself and your methods.**

See if in yourself you cannot find the leak. What is lacking? Is it initiative? Is it energy? Is it enthusiasm? **Is it stick-to-itiveness?** Or, is it the lack of a systematic plan, the absence of a carefully laid out campaign of action?

Plan Sales Work—Work the Plan.

Napoleon's battles were won on paper before they were fought. The battles of selling are won the same way. In many cases where an automobile dealer is not doing as well as he feels he ought, the condition can be traced to unsystematic work. Some people dislike the word "system." To them it means blanks to fill out, "red tape," they call it. But it does not mean anything of the kind. It means **plans;** plans laid out after careful study of the car and the territory, and the prospects. It means carrying out those plans. It means hewing to the line. It means no longer working haphazard, but making every moment of your time count.

Keeping Up Strain.

The distinguishing feature of big executives is usually nothing more or less than the ability to **plan** and execute those plans through others.

The more you can do and get out of your own time and that of your employes, the more money you are bound to make. This doesn't mean slave-driving; it means planning for the elimination of waste.

Plan Each Day's Work.

Each man is an organization in himself. His time is his most valuable asset. As Arnold Bennett says, "No man has any more or any less than you have," and "No matter how much of that precious commodity you may have wasted in the past, tomorrow will bring your full share, just as much as any other man living can have." Time is the capital of the salesman. This is why the salesman can afford to forget money and forget other things and concern himself with the planning of his time, as if it were, what it is, his most precious commodity.

Motor World is determined to spare no pains in making itself a really and truly DEALERS' paper. Put up to us your problems. We are bound to be A Friend at the Elbow

It Pays to Hustle.

We keep track of money, we watch its income and its outgo—why not keep track of time? Why not see how much we can save, how little we can waste, by planning? If every automobile dealer and every automobile salesman could see the importance of using every bit of time to best advantage—and working, there would be fewer complaints of poor business.

Make List of Prospects.

What shall the dealer who wishes to invest his time wisely do first? There is only one answer. The object is **sales.** The first thing to do is to make a list of prospects. Not a list of car users, but a list of the people who have sufficient money to buy a car. How shall he find out who they are? Start with the telephone directory—a list of the merchants and manufacturers—the local blue book—a list of farmers, who have money, gained throuyh friendly acquaintance at the bank or some store where you have purchased goods—inquire among neighbors—all these and many others, including inquiries among automobile owners, are open to him. These are the ways of a stranger in the community. Usually a live

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AWAKE NDISING WORLD

of every one of our dealer readers. Manufacturers also are requested to send us any suggestions that will help us conduct this department along these lines.

dealer knows who among his townfolk can afford to buy. If not, he can find out with littel difficulty.

Get a Grip on Yourself.

After the list is made up, what then? One firm makes out a card with name and address of prospect and date card is made out—this is filled in in triplicate. One card goes to the salesman, one to the desk of the owner of the garage, one to the office file. This firm has three salesmen. The prospects are divided among them according to the dealer's judgment. Now enters "system"—a definite plan into operation.

Testing Your Capacity.

Every salesman makes a calling list every day and reports on the calls next morning to the office girl, who enters reports on file cards and on the dealer's personal card. The dealer, who thus becomes a sales manager, finds the cards containing yesterday's reports on his desk first thing in the morning. He makes whatever further plans are necessary and the cards go into his file. The important and vital part of this plan is the daily report and the fact that **every salesman must report on his prospects complete within thirty days.** That is, he has thirty days in which to make a sale. If he does



CARTERCAR SALESROOM IN DETROIT IN WHICH MODERN MANAGEMENT PREVAILS

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not make the sale within that time or show some evidence of negotiations that are about to mature within a few days, the prospect is assigned to another salesman.

Establish "Quota" Plan.

This same concern, which, by the way, has been very successful, has established a sales minimum below which no man can fall and keep his job. It may be four cars or five, depending upon the model sold. This plan is known as the "quota" plan and is employed by notably successful specialty concerns such as the Burroughs Adding Machine Co. and National Cash Register Co. It works. It is the right plan for the automobile salesman, because he is a "specialty" salesman.

Stop Fiddling.

To fix the right quota is a delicate job. It requires intelligent study of the field. but it can be done. Even if the dealer is his own salesman, he can employ it. Let him fix the number of cars he should sell in the year. Then divide that up into months, weeks and days. Then live up to it. It means work. But it is exciting, energizing work. It fills one with enthusiasm. It braces one up. It makes one plan and helps him to cut out the waste. It means more sales and more money. It will keep a man so busy working—not "fiddling around" the store or garage—but meeting and selling prospects that he will wonder why he never thought of such a money-making plan before.

TRAIN EMPLOYES TO GIVE CUSTOMERS INSTANT ATTENTION.

A well known Detroit automobilist drove his car up the long concrete pavement leading to a North-end garage in Detroit. He wanted gasolene. There was a man fixing a tire two feet away from the gasolene pump; he looked up, said nothing and went on with his work. Then a man emerged from the back of the garage, where supplies were kept, and walked rapidly toward the front office. Then a man doing some polishing over in a dark corner peered at the motorist suspiciously but continued polishing. The man who had been making tracks for the office returned to his lair in the back, walking rapidly past the newcomers as if they had smallpox or some other virulent disease.

Do You Drive Trade Away.

So far, it appeared to the motorist that no one was over eager to do business. Then he woke the echoes with his Klaxon. Presently the polisher came forward, cloth in hand, and inquired if he wanted anything. "No. I just drove in to watch the vaudeville," said the heated automobilist as he backed out. Seven minutes he had been waiting, each minute getting more impatient. Now he boiled over and was gone elsewhere. Could such an incident have happened in your garage? Do you know any better way to drive away customers?

Every Man Is a Salesman—Tell Him So.

Every man on the garage floor is in a real sense a salesman. This should be impressed on him. His methods reflect the proprietor. Any one of these men could have said cheerily, "Just a minute and someone will wait on you." Not one of them said anything. If the proprietor had been there the chances are he would have rushed over to see what was wanted, glad to welcome a gasolene customer who later might become a car customer. His neglect lay in the fact that he had not communicated his spirit to his men.

In no business do the employes come in closer contact with the trade. In no business is it worth more to have customers looked after promptly, courteously and attentively. A little confidential talk along this line to each individual man will work wonders. Try it.

Provide Proper Toilet Facilities.

It is not as difficult as it might seem to trace a very definite connection between good merchandising and better toilet facilities for garage patrons.

This statement is prompted by the fact that in a tour of several thousand miles in many states, during which several hundred garages were visited, it is impossible to recall more than one or two places where the dealer or proprietor had provided suitable or adequate toilet facilities for customers.

The Insult of It.

Two styles of "facilities" occur to mind—one is the usual dirty, dark corner with a cigar box nailed above supplied with soft soap—the other style is the hose tap. In no case were clean towels supplied; in most cases no towels were supplied, not even a roller towel.

Things in a good many garages would be very much different if the proprietors could, in imagination, step outside and for a few minutes become customers.

Do It Now.

No dealer can afford to be so backward as to overlook providing conveniences for his customers. The clean wash room with decent soap and clean towels is something that is bound to come eventually in every garage. Soon dirty and neglected washrooms will be a thing of the past. Why wait? Why not be a leader and provide the proper toilet facilities now when their introduction as part of your regular equipment would be a distinct gain and add to your reputation for up-to-date methods.

IT PAYS TO PUSH ACCESSORIES. PLEASES CUSTOMERS, TOO.

The first thing that meets the eye of the motorist who drives into a popular Eastern garage is a big sign reading, "We carry a full line of Tires and Accessories."

"You have no idea what a hit that makes," said the owner. "Not the sign, but the fact that we do carry a complete line of everything the motorist possibly can need. Besides a full line of repair parts, we carry trunks, trunk racks, tires, lamps, horns, speedometers, spark plugs, oils put up in cans of all sizes, graphite, grease, dope, guns, patches and so on down the list. We buy this stuff right and sell at list prices, and if we haven't the article in stock we send and get it.

"Besides showing a liberal profit on the investment, our tire and accessory department has helped to make our garage automobile headquarters for miles around."

Too many dealers confine their efforts to gasolene and oil, when they could be making money and friends by putting in a complete accessory line.

Things That Affect Lamp Filaments.

In nine cases out of ten undue breakage of tungsten filament lamps which are used in connection with motor car lighting systems is attribluted to excessive vibration to which the bulbs are subjected, but there are other causes of such breakage. For instance, if the automatic regulator fails to function properly when the motor is turning over at a high rate of speed, the voltage will rise to a degree where the lamps in all probability will be "flashed" or burned out. In such a case all of the lamps which were lighted at the time will be rendered useless. Where two or more lamps are connected in series, as obtains in not a few of the systems in use, a short circuit which cuts out one of the receptacles will cause the other lamp to be burned out. The remedy, or, more correctly speaking, the preventive is found in the provision of fuses of suitable capacity adequately to protect the lamps. Naturally where fuses are installed the generator also is protected, for the fuses prevent overload.

For temporary use on finished surfaces it is a good plan to cover the face of an ordinary hammer with a piece of leather secured with wire.

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STOPPING THE SALES TALK AT THE "SELLING POINT"

Talking Too Much May Cause the Prospective Customer to Change His Mind Whereas a Pause at Right Moment Assists Sale—Studying People as an Essential Part of the Salesman's Education—Dealer Reilly Exemplifies on a Saturday Half-Holiday.

Once in a while in the boy's sized city where Reilly annually placed in service his allotment of cars—and then a few more—the business men agreed that upon certain Saturdays they would lock the doors at noon and convince themselves that they were taking a day off; on such occasions "automobile row" generally followed suit and most of the demonstrating cars in the city could be found upon the long and shady stretch of state road which formed the overland connecting link between the town and the next city, which happened to be the one where was located the factory in which Reilly's line of cars were made.

Anticipations of a Pleasant Spin.

On a certain Saturday the factory Sales Manager had dropped off to see Reilly on his homeward way from a "boosting" trip through the State, and, arriving at near noon, the two planned to run up to the factory that afternoon, for this was one of the Saturday half-holidays, and as the sales manager walked down the street where there was more or less of an odor of gasolene in the air, "automobile row" was making most of the remaining half hour before it closed the doors. The sales manager, although riding in a car was nothing new to him, looked forward with pleasure to the homeward run, for besides being a pleasant journey over a superb road, it was far better than being cooped up in a chair in a railway coach.

"What time do we start?" he asked as he swung in through the door of Reilly's salesrooms and dropped his traveling bag inside the office door.

An Eleventh Hour Visitor.

"Not until after 12 o'clock," was the answer. "We don't close up until noon. We could, of course, if we wanted to, but I never like to shut up during office hours. Besides," he added with a dry smile, "I might make a sale."

"O, very well," responded the sales manager, who forthwith hied himself to the inner office, threw his feet upon the desk and lighted a cigar. Reilly meanwhile was busy with various details.

It was five minutes to noon by the clock when the salesman arose and strolled out upon the salesroom floor. Time was passing slowly for him, and he intended giving Reilly one more prod to see if he could not get a "rise" out of the usually agreeable dealer. But the salesman never gave the prod. As he reached the center of the floor there came breathlessly in the door a man who bore exterior evidences of caste in the business world and in whom such haste appeared unseemly. He seemed relieved when he found himself inside the doors and, slowing up a bit, he approached the sales manager and said, "Are you Mr. Reilly?"

"This is Mr. Reilly," replied the one addressed, as he indicated the dealer.

Sold With Surprising Celerity.

"Didn't think I'd make it before twelve," panted the newcomer. "Glad I beat the clock. I want to buy a car. What's this one here—is it for sale?"

"Yes, sir; it's the only one on the floor I can let go. That and my demonstrator are all I have on hand just now."

"What's the horsepower and capacity and how much is it?"

"Thirty-five horsepower, five passenger, fifteen hundred dollars."

"Good; I'll take it. Accept a check?"

"Certainly," replied Reilly, who recognized his customer as a well-to-do merchant; "do you want the car now?"

"I certainly do," was the answer; "I want to use it this afternoon. I've been going to get a car for some time, and this fine half-holiday—and my wife—sort of hurried me up."

While the customer wrote the check Reilly ordered the gasolene tank filled and the car made ready. "Can you drive?" he asked.

"Yes, I learned that this summer, expecting to get a car later in the fall."

Where Argument is Superfluous.

The clock pointed to 12:05 as the car glided out the door and the sales manager was speechless. "Some sale, isn't it?" he ejaculated.

"Oh, no," said Reilly, in his quiet way. "That's the way we sell all our cars."

"Ah," was the salesman's guttural exclamation of disbelief.

The dealer's only answer was to tuck the check in his billbook.

"Honestly," said the sales manager, "I never saw a sale made that way. Why you never even told the man anything about the car. He blew in here like a cyclone and you never gave him a chance to be convinced. You never told him anything about the car. Do you let everyone come in like that and not try any sales talk on them?"

"Sold the car, didn't I?"

"Yes, but——"

"Got the money, haven't I?"

"Sure, but——"

"Well? But what? What's the use of telling the man a lot of stuff when there is no need of it? If he gets to the point where he wants to buy, sell him a car. Don't waste a week chewing at him and give him a chance to change his mind. One of my owners has been influencing this man, so I didn't need to talk. I expected he'd buy some time."

Knows When to Stop Talking.

"That gets me, though," said the still amazed sales manager.

"Well, if it gets you right it'll do you good," retorted Reilly. "That's what ails ninety per cent. of the salesmen you meet. I'll guarantee about all you have on your staff are the same way. They know how to begin but they haven't got brains enough to quit. What's the use of talking longer than is necessary?

"I've had all kinds of salesmen and I never had but one who was a real honest-to-God salesman. I've got him yet—and I don't intend to lose him if I can help it. I spent some time drilling a few things into his head, but he was a bright sort of a fellow and he certainly soaked up his lessons. Now he's even better than I am. He has learned when to stop talking. You take the average salesman and he starts with an idea that he must learn the car he is going to sell and learn it so that he can rattle off a story about it down to the last bolt and nut. He thinks all he has to do is to stand up beside the car and speak his piece and by and by the prospect will take him by the throat and insist that the salesman trot out a contract for the prospect to sign.

Wherein Salesmen Differ from Parrots.

"The first part of it is all right— and the last part is all wrong. The salesman needs

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to know the car, and he needs to know how to be able to talk about it convincingly, but he ought not to overdo it. Every prospect will stand a certain amount of talk and then he either is going to buy or he isn't going to buy. If he thinks he isn't going to buy, a little more persuasion won't do him any hurt, but if he is going to buy, a little more persuasion is quite likely to kill the sale.

"How can a man know when to stop? Right there, Jimmy, you have hit it on the head. There is no rule; it's something a man can't be taught unless he is the right kind of a man. You can give a man all the instruction you want, but if he hasn't the faculty of reading people he might as well give up hope of ever becoming a real salesman. He doesn't necessarily need to be a mind reader, but ought to be able to follow a prospect's thoughts after a fashion. The best men in the business have learned this themselves without any instruction whatever on that point.

The Salesman Who "Fell Down."

"I saw a salesman one day trying to make a truck sale in another agency further down the row. He knew his truck from A to Z and could not be stuck on anything mechanical pertaining to commercial vehicles. He also had made a study of the prospect's problems and had very convincing arguments as to why this particular truck would fill the bill in the prospect's service. The merchant was open to conviction, and listened with interest to what the salesman had to say. That the man really seriously considered buying a truck or at least was giving attention to the proposition was evident from the questions he asked about the wagon and what it would do. He wasn't very familiar with commercial cars but knew of instances where they had more than made good, and was the type of man who would invest two or three thousand dollars if he saw a chance of making a saving somewhere that would be commensurate with the expenditure. He was almost willing to risk the price of the truck just to satisfy himself as to its saving ability in his business.

"Well, the salesman talked and talked and talked. He had answered all the prospect's questions satisfactorily and had shown up the truck finely. He really had done a good bit of sales work in the way he talked up his truck. But—he didn't make the sale. The prospect reached the point where the argument should have been closed up, and the prospect been given an opportunity to sign a contract, but the salesman missed out at the crucial point. He was overanxious and kept right on handing out dope talk what a good thing the truck was and got to a point where he was repeating a lot of things he had said before. Repetition is all right in the right place, but this fellow repeated his repetition and the prospect got to thinking it over, changed his mind, and decided not to buy.

What the Prospective Buyer Thinks.

"What happened to him was what you have had happen to yourself many times when the same kind of salesman tried to sell you something. He was convinced and ready to buy at a certain point, but with a little more time he got to reflecting and the more he reflected the more he began to believe that it would be just as well if he waited a few days and investigated a little further. He finally said he was very favorably impressed with the truck, but would rather wait a few days and talk the matter over with some of the men at his place of business. The salesman tried his best then to clinch the sale. He knew he had been close to it and ought to have gotten it, and he couldn't for the life of him see why the merchant didn't sign up.

"Did he sell it a few days later? No, he didn't; they very seldom do. What he did was to pave the way for a truck sale for another dealer. The salesman's arguments and study of the merchant's delivery and trucking problems had shown the prospect where a truck would save him money, but having once been almost persuaded and not having bought he had a peculiar feeling toward this particular make of truck. Other dealers were after him, and one of them, who knew how to do it, landed him in less than half the time the first salesman spent on him. The second salesman saw that the merchant realized that he needed a truck, and when the advantages of the second one were shown up and the sale clinched at the right time, that ended it. Also, the man on the scene always has the advantage even though the prospect be partly favorable to another type of vehicle. Once let him get away from you and he generally is gone for good.

Selling at the Right Time.

"Sometimes it takes days or weeks to get a man up to the buying point. As a general rule the first session does not end in a sale; but when the prospect has been well worked along and you get him up against the car itself and feel that the time is ripe and the prospect ripe, too, then is the time to pick the fruit. It's nothing more nor less than picking fruit; there is one time when it is just ripe and ready to fall into your hands, but if you let it hang it gets rotten and never falls, or else it falls into some other man's hands. It isn't always a popular line that sells; some salesman can sell anything."

"But, Reilly, do you believe in selling a car or a truck to a man when you know he doesn't want it and doesn't need it and would be disappointed with it?"

"No, of course not. Some dealers will do that, but the man who is building for the future will spoil his structure if he uses such stones in his foundation. Success to a large extent is founded on satisfied owners, and while service and other things help bring about this satisfaction, it is hard through service or anything else to keep a man satisfied when he knows and you know that he has been loaded up with something he doesn't want and has little use for. Some men are easy marks for salesmen, but if the easy mark has no use for my goods I am not going to sell to him. It might be different if it was something that didn't cost but a few dollars, but when it is a car it is too much money for the ordinary man to throw away."

"But outside of all this, what time do we start for the factory? I was in a hurry when I came in here, and here you have kept me monkeying around until now it's half past twelve."

"Start?" said Reilly. "Start now if you're ready! I've been waiting for you since that man went out with that car!"

Loading Up the Easy Mark.

"Well, let's start," said the sales manager as he climbed into the car and waited for Reilly to do likewise. "Say!" he added, "you certainly are some spellbinder; here I've forgotten all about eating dinner. Where does that come in?"

"Oh, we'll stop at a little Dutch roadhouse just outside of town. And if you want to see an example of how a salesman will try to load up a man with his goods, just wait and see what that Dutchman will try to sell you for dinner."

"Well, hurry it along," urged the sales manager, "for if the Dutchman's got any kind of a line of goods I'm afraid I'm going to be an easy mark."

Cranking An Engine Against Compression.

A motor that is very hard to turn over against compression sometimes is started by swinging the crank to and fro several times in order to gain the momentum necessary to carry over the compression. When it is necessary to do this the greatest care should be taken to see that the spark is retarded. If the spark is the least degree advanced a back kick is more than probable if the center is approached slowly, though in the case of a motor that could be turned over rapidly, a very slight advance would do no harm, nine times out of ten. Even in a small motor, however, the only real safety lies in having the spark really retarded.

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DEALER WHO STUDIED THE FLOOR OF HIS SALESROOM

Arrangement of Cars That Was Evolved as the Result of Careful Thought Proves Drawing Card for Metropolitan Motor Car Representative Space Is Economized at Same Time That Attractiveness Is Increased—Effects That Were Obtained.

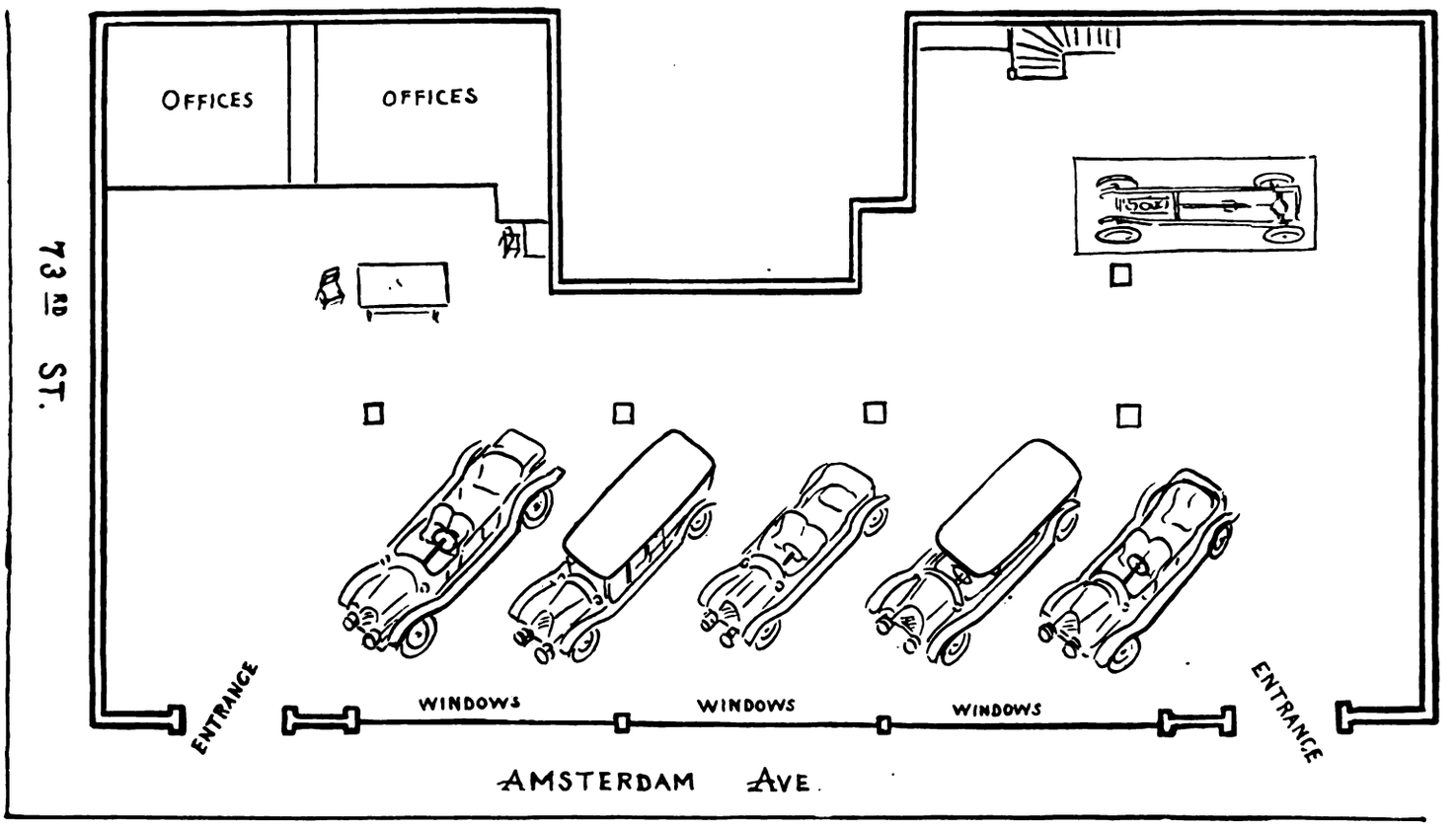
It is the little things, so men ever have been told, that go to make up the great aggregates, the results which in themselves appear as one colossal achievement, but which are separable into an infinity of little things, all contributing to the greater whole; this has been proven true in business, so efficiency engineers say, and it is found nowhere more frequently so than in those automobile businesses which have achieved success.

Unconscious Use of Little Things.

Many dealers and garage operators do not realize that they have "made good" by making what to many would appear as insignificant items contribute their part to the upbuilding of their trade; but when they are asked about certain details, certain reasons for their having done certain things, the onlooker is quick to see that the little things are there in force and every one of them working to the limit.

Just where and how a car shall stand upon a salesroom floor may not appear consequential, as is evident from the helter-skelter arrangement which prevails in too many salesrooms; securing a large stock of cars often is the common desire, and any advantage as to their placing is lost sight of in the dealer's enthusiasm over his allotment. Too frequently he fails to realize that the prospective purchaser's first impression of the car may be lasting; if the latter acquires a prejudice at the first glance it may mean the loss of a sale, even though he be otherwise almost convinced, while if he be favorably impressed with the primary look it may ease the pathway to the little line at the bottom of the contract. But not all dealers incline to helter-skelter arrangements.

One day last week a visitor dropped into the establishment of the Franklin Motor Car Co. at Amsterdam avenue and West 73d street New York City, to pass the time of day with Glenn A. Tisdale, who in his six feet and then some represents the Franklin line of cars in the metropolis. The two, in conversation, drifted toward the new models which stood upon the floor and as the visitor looked he noticed that whereas there were three spacious plate glass windows in the front at the right of the doors, the cars, five in number, stood several feet from the windows and at an angle, and were moved backward so that the front of each car was near the center of each big pane of glass.



DISPLAYING MOTOR CARS TO ADVANTAGE—SALESROOM ARRANGEMENT THAT SECURED STUDIED EFFECT

Criticism That "Back-Fired."

Salesmanlike, the visitor, thinking either to help or to find a flaw in his rival's arrangement of things, said:

"Tisdale, you're wasting window space here. Why don't you move two of these cars to the back part of the floor and shove the other three close to the windows and straight alongside so that people will have

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to see them as they go by on the outside and can get a good close view. It looks to me as if you ran them in here with as little labor as possible and left them in the place they happened to stop."

"'S that so?" ejaculated Tisdale.

"Looks that way to me," answered the visitor, thinking he had cornered his friend, and there was a trace of a smile on his face as he waited for the embarrassment to appear on the dealer's countenance.

Tisdale may be embarrassed at times, but he never yet was known to show it; he is too big physically to get the habit.

The Arrangement and the Reason.

"Well, let me tell you something, son," he replied. "You may be a fine big man down in your establishment, but you've made one mistake. Instead of making an easy job of placing these cars I put in some study and work on their positioning, and I put them where they are because I had a reason; moreover, your suggestion is respectfully rejected; the cars stay where they are."

The visitor laughingly asked the dealer to "elucidate."

"There's nothing to it except that I wanted the cars where we could show them to best advantage, and this is the place and arrangement."

"I don't quite follow you," replied the visitor, now really interested. "Also, isn't the placing of a car rather a small thing to spend a half a day figuring on?"

"Nothing is too small if it can help business. I'll show you how it works: The cars used to stand straight alongside, exactly as you suggested, but I could see it wasn't just right. Of course, you can see the cars from anywhere in the salesrooms, but there is more in seeing a car than just looking at it. We are nothing more than salesmen, and we want our goods to show up to best advantage—for the first look may mean a great deal.

Taking Advantage of the Light.

"Come here! From this point with the cars between you and the windows, you are so situated that the side of the car you see is in the dark, although it is not so very dark, either, but from this position the light from the window is in your face and the car is between you and the light. The cars don't show up as well as they might. There are details and refinements of finish that I can see and you can see, for we are automobile men, but anyone who is not in the business might not notice these things.

"Now step around here by the right front headlight of this first car. See the difference? The first thing that strikes your eye as you step up here is that long row of ten headlights on the five cars and with the five hoods in a line so that you can see every one of them, it looks rather pretty. In regard to the view of the whole group, just step outside. You see, as we walk south on Amsterdam avenue, the first glimpse is of the fronts of the cars, and then as we move along we swing, one by one, around to the side and get, first, a three-quarter-side and then a full side view—if we look back; and most passersby do look back. The same scheme works all the way down the line. I have had many people come in and say, 'What a fine looking lot of cars,' whereas if they were set up in a row, one after the other, and in close to the windows they would hardly be noticed. Another point is that while, with the other arrangement I could show but three cars, I am now displaying five, and the five look better than three.

"Let's go back inside again and start near the main entrance. The customer naturally steps around in front of the line of cars and as he gets over beyond the line of the left wheels the side of the first car comes into view. The light from the window falls full upon it and every detail of finish stands out. From here the interior is visible just enough to give an idea as to its finish and the customer can see more of it by stepping closer.

Prospective Buyer is Encouraged.

"Having looked at one car the customer, without being invited to step along, naturally moves on to the front of the next car and around to the left side and can walk down the whole line and see everything. If he walks around to the dark side, which is not so very dark either, he has seen the light side and is enabled to imagine any details of body finish which do not stand out as distinctly as they would in better light. The good impression has been made, if it is to be made at all, and a subsequent inspection of the darker side is not going to spoil it.

"With the cars straight alongside as you suggested, we would not have room enough to walk between them and the windows without being too close to appreciate the assembled lines and detail. Of course, with them that way we could see the whole side of the car; but look at the way they are now! The front of one car comes scarcely half way down the side of the next one and the whole side gets all the light it needs; there is room to walk between, too.

"Trick of the trade? It's nothing of the kind. Such things may be a part of the selling business, but they are far removed from anything that savors of trickiness. I am only doing what is right by the car and by the man who wants to buy one. In any store you may go into the public likes to see things attractively arranged, and the enterprising store manager sees that that is done. Goods are displayed so that they will get advantage of whatever light effects there may be. No man cares to be taken off into a dark corner of a salesroom and told that such and such is the case with the car and that it looks so and so and has such a finish and so on. What he wants is to see the car, and he wants to see it right.

Proper Display the Dealer's Duty.

He wants to look at the car in its best form, and he wants to know that after he has seen it he has seen all there is desirable about it. If he gets a false impression about the car because of the way he sees it in the salesroom, and then some day meets the same car on the street and happens to discover that it is a lot better looking than he thought it was, or has certain features that failed to impress him fully in the salesroom, he gets a poor opinion of me and hands out a funny look every time he goes by the place. It's up to me to do the best I can by the car, inasmuch as the car can't say much for itself unless given the right opportunity.

"With the present arrangement this space at the end of the floor near the main entrance is where we meet most people when they step into the salesroom. If they wish to look at a car immediately, and most of them do, we step near that right front wheel and the customer gets his first view from a point where things show up to best advantage. Were the cars in closer to the windows and the customer tried to walk around them he would be so close that he would be looking right down on top of the mudguards, and there are few cars that present a good general outline from that angle. Things appear out of proportion and the customer's first impression is that of a whole lot of disassociated parts instead of an impression of an assembled whole of attractive outline.

"If we have less than five cars we arrange them much the same way and can get a fairly good layout, but what to me is the fine big sunburst effect is gained with five cars in a row. It just fills this way; with any other arrangement it would appear overcrowded and that always spoils everything."

Nothing That Doesn't Merit Attention.

"Well, do you really think it makes much difference?"

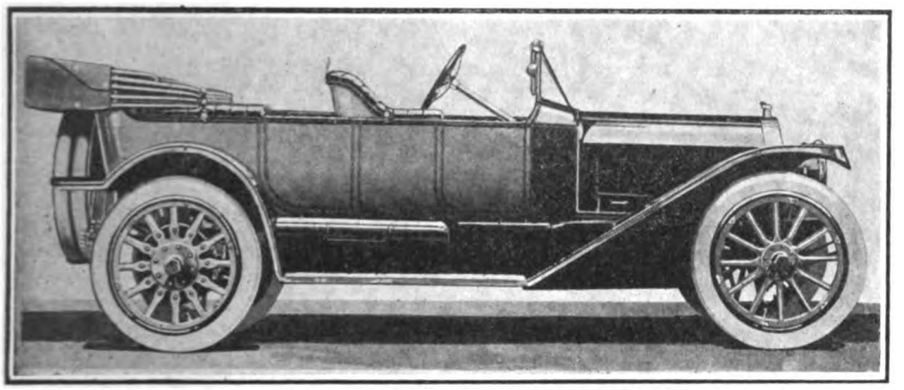
"To be frank with you, I can't tell you of a single instance where this arrangement is directly responsible for a sale, but I know it has helped with many sales, and so it's worth bothering with. Also, son, remember this, in any business there is nothing so small that it isn't worth some attention."

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HAVERS "LITTLE SIX" NOW HAS BIG BROTHER

Michigan Manufacturers Supplement "6-44" with "6-55" Which Retains Havers Characteristics—Popular Prices Prevail.

Having had opportunity to study the requirements of its host of satisfied owners, the Havers Motor Car Co., of Port Huron, Mich., has profited by its past year's experience, and in addition to making such changes in the construction of the popular Havers "6-44" for the coming season as seemed advisable, has added another model to the line. It is a "six," of course—the Havers company never has made anything else—and though it is new, it is not so new as it might be, for it is nothing more than an enlarged version of the smaller "six," which during the past season has added to its prestige.



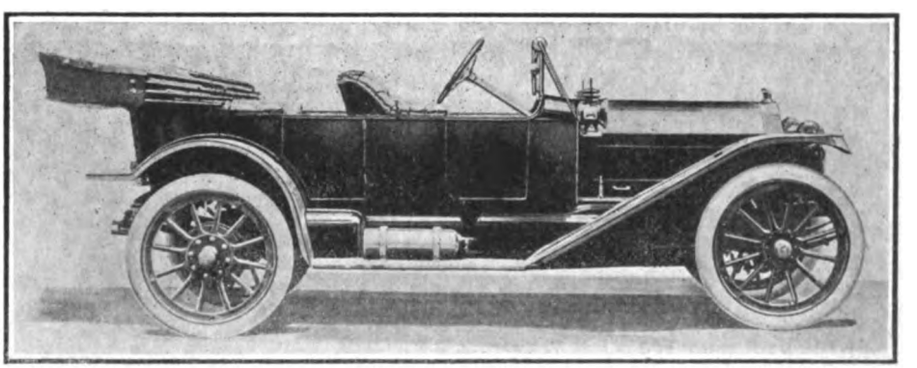
NEW HAVERS "6-55" FIVE-PASSENGER TOURING CAR

The new car is rated at 55 horsepower—its official designation is Series D, "Six-55"—and like its running mate it sells for a moderate price, $2,250, the figure including full equipment even to a combined electric lighting, engine starting and ignition system upon which the Havers company has had its engineers working for upward of two years. The price of the older "6-44" model remains at $1,850, where it was set when the car originally made its appearance, the figure including complete equipment as a matter of course.

In describing the slight changes which have been made in the older model, the phrase "minor refinements" is particularly apt. For instance, the side lamps, where the electric system is specified—it may be had on the older model, at the option of the purchaser, though at a slight increase in price—are set in flush with the dash; the spare tires have been relegated to a less conspicuous and more convenient position at the rear of the tonneau; the gasolene feed has been made more positive by supplying the fuel under pressure; considerable attention has been given to refinement of finish, and the results are shown by the smooth exterior, the clear running boards and the well-blended lines of the body and the bonnet; and last but not least, the whole chassis has been fine-tooth combed in an endeavor to locate weaknesses or places where the already high factor of safety could be increased to advantage. The result has been a slight strengthening of several parts upon which unusual strains are placed in the course of a season's touring over give and take roads.

The larger model, as already has been mentioned, is new all the way through, and as it has been built upon experience gained in the production of the "6-44," of which it is practically a duplicate in everything except size, it is but natural that it should reflect many of the distinguishing marks of its prototype. The body is larger and roomier, of course, and provides more than ample space for the comfortable disposition of five passengers. It is made in but two types, the five-passenger touring car and a low rakish appearing roadster which has all the earmarks of a racing car combined with the comfortable seats and luxurious cushioning of a touring car. The seats in the roadster—it is styled the Knickerbocker Speedster—are tilted backward at a comfortable angle, and the steering column has been raked aft to bring the wheel within easy grasp of the operator. The mudguards are slightly different from those that are used on the touring model, and their lines lend an air of "speed" that is undeniable. The gasolene supply is carried in a big cylindrical tank behind the seats in true racing car style, and, as in the other models, the running boards have been bereft even of tire irons; tools and supplies are carried in built-in boxes, lock equipped, that fit close to the frame and serve on occasion as steps. Tires are carried at the rear.

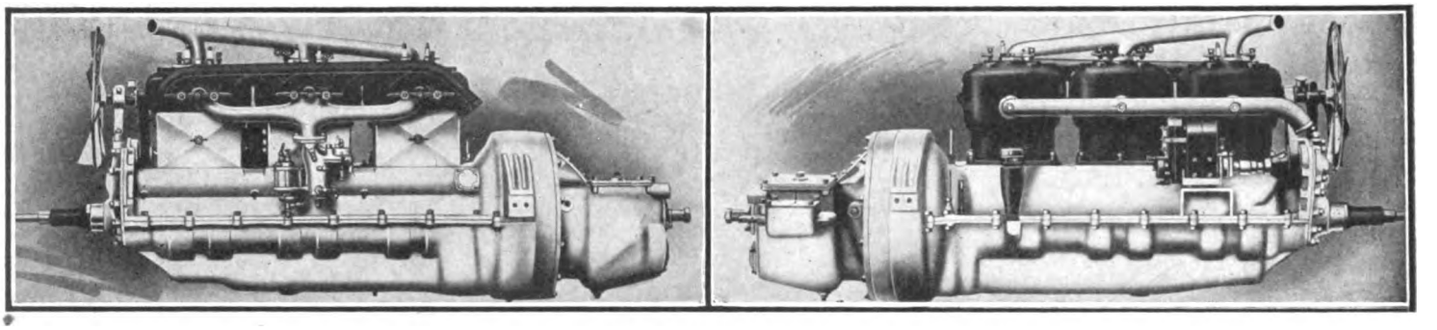
In the general design of the motor in the new car, Havers principles, laid down some three years ago, have been adhered to with scarcely a deviation from previous construction. As a matter of fact, the motor in the new car is so like the motor in the older model that a single description will serve for both, and as there have been no alterations in design the description resolves itself automatically into a recount of the specifications. The cylinders are cast in pairs, and the bore and stroke are such—4 inches by 5 inches—as to leave little room for doubt regarding the class to which the motor belongs. Bearings are unusually liberal, the flywheel bearing, for instance, measuring 4 inches and the front bearing 3½ inches, and the connecting rods have been designed with a view to obtaining the highest possible factor of safety consistent with light weight.



REVISED "EDITION" OF THE HAVERS "6-44" MODEL

Cooling is effected by water circulated by means of an efficient type of centrifugal pump. As an indication of the thoroughness of design, the water jacket space surrounding the cylinders and valve pockets is three-quarters of an inch in depth. Ignition, as has been mentioned, is a function of the combined electric lighting and engine starting system. On the smaller engine a Bosch high tension dual system is employed except when the combination electric system is specified. By way of ensuring proper and positive lubrication, the manufacturers utilize a combined force feed and splash system in which the oil is pumped from a reservoir in the crankcase through a sight feed glass and suitable

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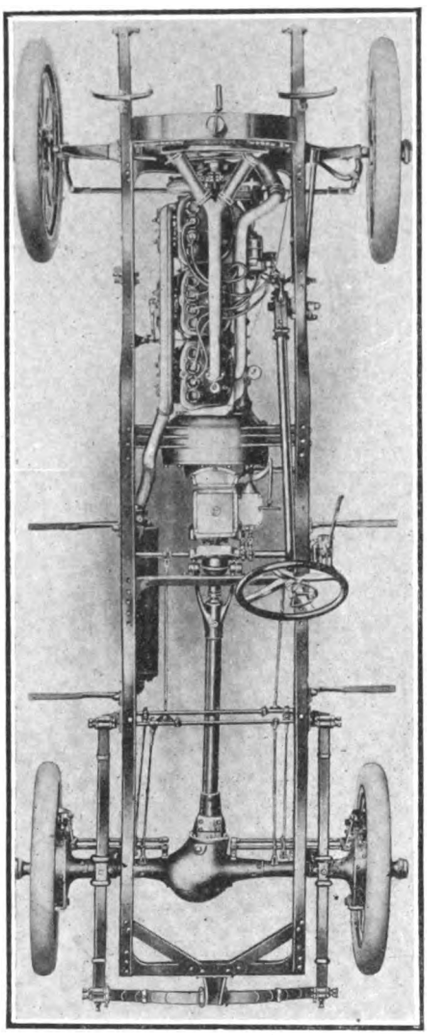
BOTH SIDES OF HAVERS "SIX" ENGINE, SHOWING UNIT CONSTRUCTION AND CARBURETTER AND MAGNETO LOCATIONS

ducts to the main bearings, whence it collects beneath the connecting rod big ends and is splashed over the cylinder walls and auxiliary bearings. "Mixture" is supplied by a Stromberg carburetter. Motor, clutch and change speed mechanism form a rigid unit which is supported at three points on the main chassis frame, thus providing for a certain amount of frame weaving without detrimental results to the power plant or transmission elements.

From the motor, power is transmitted through the intermediary of a multiple disk clutch, the alternate disks of which are faced with Raybestos. The change gear mechanism provides three speeds forward and reverse, control being selective by means of the orthodox hand lever and H-gate quadrant. The gears are formed of chrome vanadium steel, are wide of face and are carefully heat treated. Both the main shaft and the lay shaft are mounted in large diameter annular ball bearings. Clutch and gearset specifications are the same for both models, due allowance being made for a difference in size commensurate with the different powers of the two engines. In fact, all the other constructional details also are alike, the only difference being in the size of the parts, which are larger and heavier in the new model.

In conformity with the growing tendency toward such construction, the propeller shaft is enclosed in a substantial torque tube, which serves to absorb the twisting strains coincident to driving and braking. The torsion tube is not designed to transmit the driving strain, however, separate rods being provided for this purpose. The torsional strains are carried through the frame by means of a heavy yoke carried on a cross frame member. A single universal joint and a slip joint provide the necessary flexibility and assist in maintaining the proper relationship between the rear axle and the frame. The rear axle is of the full-floating type, in which the driving shafts are 1½ inches in diameter. They are formed of nickel steel. The front axle is drop forged, I-beam in section, and has the steering yokes drop forged integral. The frame is double dropped, and is formed of pressed steel in channel section; the width is 30 inches in front and 31½ inches in the rear.

Both sets of brakes are located on the rear wheels, and both are equipped with



HAVERS CHASSIS IN PLAN

equalizing devices. The steering mechanism is of the worm and full wheel type, which construction was chosen because of the facilities for adjustment which are afforded; the gear is irreversible. The wheels are standard artillery type and are equipped with either Baker or Firestone quick-detachable-demountable rims, at the option of the purchaser, tire sizes being 36 x 4 inches both front and rear. The wheelbase of the large model is 128 inches and of the smaller model 122 inches, the tread being standard, 56 inches, in both cases.

As has been stated, the same general specifications apply to both the older model and the new car, with the exception of a difference in the size of the parts. The motor in the "6-44," for instance, measures 3¾ inches bore and 5 inches stroke, the nominal horsepower rating being 44. Equipment in both cases is complete and includes Gray & Davis lamps finished in nickel and black enamel, Havers mohair top with patent inside curtains, automatic ventilating windshield, electric lighting, starting and ignition system (where specified in the smaller model), horn under hood, foot, coat and robe rails, tire irons with extra demountable rim, combination speedometer and gradometer, and the usual supply of tools, spare parts, tire repair kit, and so forth.

Healing Deep Scars in Body Work.

Deep scratches of indentations on the body work of a new car cannot be made imperceptible simply by refinishing with paint and varnish. In cases of the kind, the injured portion should be soaked in warm water for a time, care being taken not to let the water dry, or a white filmy spot will be the result. While the work still is warm, a filler consisting of equal parts of beeswax and rosin should be run into the crevice. After the filler has had sufficient time to set, it should be finished off with very fine pumice and water, after which a smoothly applied coat of paint and a couple of coats of varnish will complete the task and should leave no marks.

Using Windshield to Assist Ventilation.

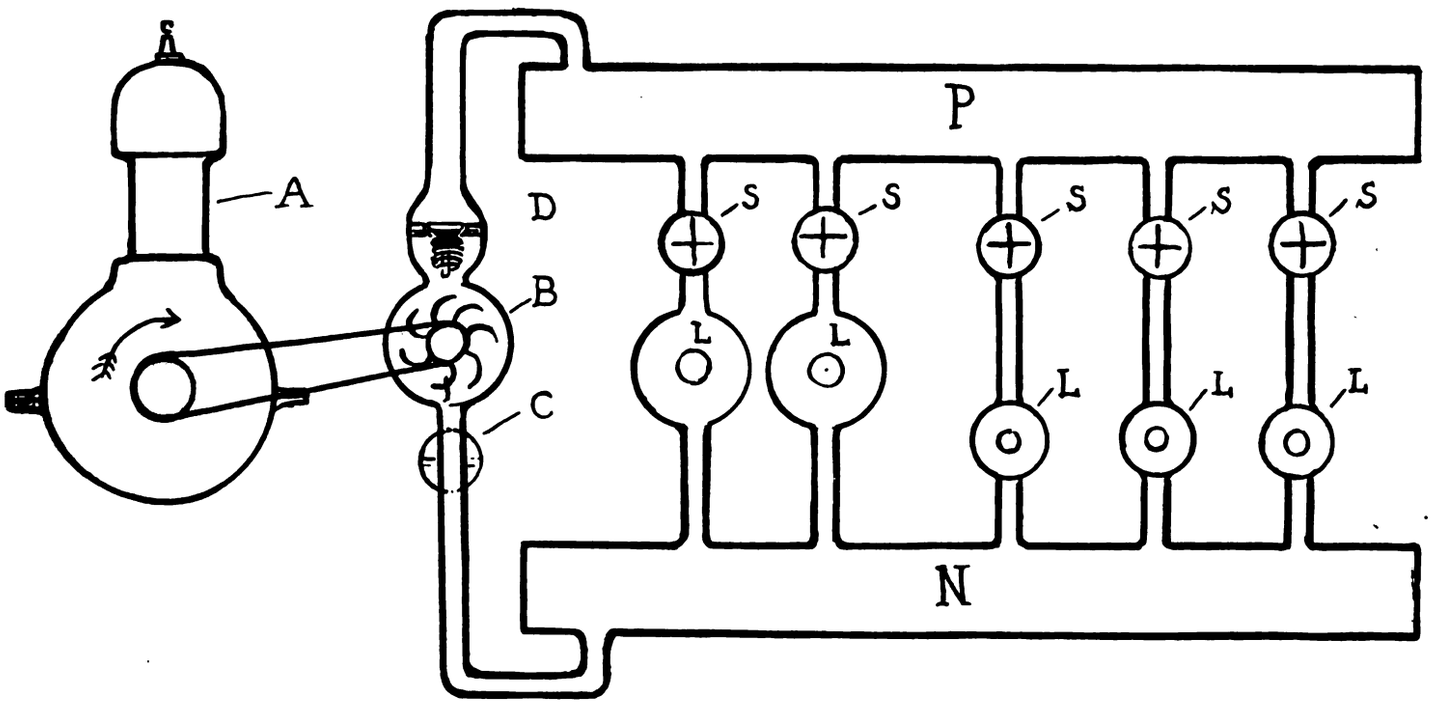
Even though ventilators generally are supplied to add to the comfort of those who drive cars equipped with front doors, the front compartment of this type of vehicle sometimes becomes "stuffy." The condition can be considerably relieved, where a rain vision windshield figures in the equipment of the car, by tilting the top of the shield outward so that it directs a current of air downward into the compartment.

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THE ANALOGY BETWEEN ELECTRICITY AND WATER

The Electric Lighting System Likened to a Water Pumping Plant in a Manner to Make Plain the Rudiments of Electricity and the Operation of Lighting Apparatus—Magnetos, Dynamos and Motors Contrasted, Defined and Explained.

For some not altogether inexplicable reason, the word electricity, and what it stands for, always has inspired a certain awe in those whose educations have been neglected to the extent that even a brief study of its peculiarities and properties has been omitted from the curriculums. And as a matter of cold fact, electricity really is more or less mysterious and awe-inspiring in its effects. Savants who have devoted their lives to its study admit it. That it should be mystifying to them, however, is logical, for in their investigations they have delved below the surface and have uncovered phenomena of which the outside world seldom is apprised. But to the person of even average intelligence the surface aspects of electricity, which are all that really are required for everyday use, should be perfectly plain, or at least should require scarcely more than a superficial examination to lay their secrets bare.



MAKING PLAIN A DYNAMO ELECTRIC LIGHTING SYSTEM WITH THE AID OF A WATER POWER ANALOGY

Simplicity of Electrical Power.

For instance, where can there be found a simpler form of power and one that is more easily understandable than a common dry cell and a couple of pieces of wire? The dry cell is composed of certain elements packed in a moist substance and contained in a metal cylinder. The action of the elements one upon the other results in a flow of electricity along the wires. Nothing could be simpler. It is not necessary to know exactly why chemical action makes electricity any more than it is necessary to know why the wind blows, though one is as simple a result as the other, and both may be used for what they are worth without compunction or investigation.

Complexity Does Not Change Principles.

The dry cell, of course, is an inordinately simple example. Which probably accounts for its acceptance without wonder or fear by nearly every one. It has been used a very long time; its novelty has worn off and due to its reliability and ability to exist and carry on its function without the slightest attention, little other than passing thought ever is conferred upon it. Now even the dry cell is passing out of use, as far as automobile work is concerned, and very much more modern and a little more complicated electrical apparatus is taking its place and assuming its duties with results which so far have proven highly gratifying to a by no means small number of persons.

That particular apparatus is embraced in the many different—fundamentally, they are the same, or practically so—electric lighting, ignition and engine starting systems which within the past three or four years have made their appearance on the market and which within only the past few months have become such an important factor in the automobile and allied industries. Strange as it may seem, however, though the use of electricity for auxiliary purposes about an automobile is growing by leaps and bounds, until at present there are very few cars which are not equipped with electric lights, even if only a storage battery is supplied for energy, knowledge is not growing in proportion; or it may be that the much greater use of electricity at present has served but to draw attention to the existing ignorance which prevails.

Usefulness of a Little Learning.

It has been said that a little learning is a dangerous thing. It was Alexander Pope who said so in his essay on criticism. By

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the same token, a little learning may be a very excellent thing, provided that a person who knows a little about a piece of machinery may feel inclined, to his own discomfort, to tinker with it in case of trouble, whereas he who knows nothing at all about it probably will be inspired with a healthy fear of it and leave it alone to its own very evident good. But if the man who knows a little about his machinery knows that little well he is in a fair way to eliminate the trouble, and the repair bill, incidentally, before the factory mechanic called by the ignorant one nas reached the spot. It all hinges, however, on the proper use of what little knowledge may be at the command of the individual, and it may be assumed for all practical purposes that the individual who does know a little is intelligent enough to use his learning to his own advantage. At least he will be at an advantage over the individual who knows nothing.

Electricity Likened to Hydraulics.

With regard to the electrical equipment that forms so valuable a part of modern cars, a complete knowledge of electricity obviously is unnecessary. But a knowledge of the surface features is necessary. Or rather it is not exactly necessary, for, thanks to the painstaking efforts of designers, such apparatus as has been placed on the market has been highly perfected and seldom if ever requires attention, but is a wise precaution. If a man understands a piece of machinery, he can get just so much better results from it whether it ever requires attention or not.

To the owner of an electrically lighted and started car, intimate knowledge of the workings of the system is valuable, of course. And if it is valuable to the owner it is infinitely more valuable to the dealer, for he stands as the visible connecting link between the owner and the factory, and knowledge of this kind assuredly spells service, and the growth of such systems absolutely demands such knowledge, if he is to "hold his own." The dealer ought to be able to diagnose simple troubles should they arise; he ought to be able to make minor repairs or adjustments—and particularly adjustments—if necessary. Nor does such work entail a post graduate course in electricity. Every electric lighting or engine starting or ignition system, or combination system is simple if trouble is taken to look at it in the right light and not to judge all as being highly complex just becouse their parts are small and more or less jumbled together and enclosed in a compact case. Similarly, every system is essentially the same as regards the functioning of its parts.

In endeavoring to make plain to the layman the inherent simplicity of one particular electric lighting system, a manufacturer of almost international repute has adopted a scheme that is as novel as it is efficacious. The beauty of the example is that it is not alone applicable to this one system but applies to all. None but the essential elements are dealt with, and the explanation is such that anyone easily can understand it.

Similitude Diagrammatically Explained.

Briefly, his method is to liken the electric lighting system to a water system. The storage battery represents two water tanks (P and N in the accompanying illustration); the engine (A) drives the dynamo (B) which is represented by a water pump; a simple valve (D) serves to prevent the water from flowing from the tanks back to the pump, and represents the automatic cut-out with which all electric systems are equipped; a stop-cock (C) represents the switch and shuts off the flow of water; the lamps (L) are represented by water motors and are controlled by means of additional stop-cocks (S).

In theory, such a water system would work about as follows: Assuming the water tanks to be partly filled, the upper tank representing the positive plate of the battery and the lower tank representing the negative plate, the motor, if started, would cause the water motor (B) to force the fluid up the pipe to the upper tank from the lower tank, the water representing the electricity and the pump the dynamo. In this analogy, of course, the pump does not originate the water, though in the electric system the dynamo actually creates the current. In the water power illustration, the water pump creates the flow of water which represents the electric current.

Carrying Along the Parallel.

In the pipe which leads to the upper tank there is an automatic valve which closes immediately the pressure of the water in the tank exceeds the pressure of the water created by the pump, as, for instance, when the pump ceases to operate. Similarly, the valve opens to let the water through when the pressure created by the pump exceeds the pressure of the water in the tank, the action of the valve being exactly similar to the action of an automatic electric switch in an electric system. From which it may be seen that when the valve is closed the pump is doing no work and the only effort required to operate it is that which is necessary to overcome friction; the same condition obtains in an electric system when the automatic switch is open. The dynamo takes no power, theoretically, except when it is actually performing work. The valve, of course, corresponds to the automatic cut-out in an electric system, which prevents the current in the battery flowing back through the dynamo when the motor stops or the dynamo is running so slowly that the pressure of current in the battery exceeds that generated by the dynamo.

The electric current is represented by the water in the system, of course, and as the water may be discharged so may the electric current be discharged. In the example, the lamps are represented by water motors, the head lamps by large ones and the side and tail lamps by small ones. If the water motors were operated by the water pressure, they would perform work and in doing so would absorb power. Similarly, if the lamps are lighted they perform work (in illuminating the road) and consequently they absorb power and lower the pressure in the battery.

Resistance in Pipes and Wires.

The pipes in the water system represent the wiring in the electric system, and right here the analogy can be made readily illustrative of the necessity for very careful wiring, and the use of material of adequate size. If the volume of water in the tanks which represent the storage battery is to be discharged within a certain time, then piping of a specified diameter must be used. If the piping is too small, either a longer time will be required for the water to discharge or much energy will be lost through the friction of the fluid as it passes through the pipes. In other words, the "head" will be less if the pipes are small than it would be if the pipes were of the proper size. Very near exactly the same condition obtains in an electric system when the wires which are used are not of adequate size. To carry a certain current the wiring must be of a certain size. If the wires are too small they introduce resistance to the flow of the current and consequently cause a drop in potential. That is to say, if the wires are too small the voltage of the current, or the pressure or rate of flow, will be restricted, and if the wires are very much too small, the current in passing through them will cause them to heat. As the generation of heat presupposed the application of energy, the heating of the wires is prima facie evidence of a loss of power.

Plumbers' Joints and Insulation.

The water power analogy may be carried still further, and with equally as illuminative results. Thus, for instance, if the joints in the piping in the water system are not properly "made up," as plumbers put it, leaks will develop and a loss will ensue. It is exactly the same in an electric system, the only difference being that the insulation of electric wiring to preclude the

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possibility of leaks requires infinitely more care than does the making up of water connections. In fact, it has been said, and with perfect truth, that it is impossible ever to so insulate electricity that absolutely no leak results. In low tension currents, however, such as obtain in electric lighting and engine starting systems, it is quite possible to obtain insulation which is to all practical intents and purposes perfect. It is in the insulation of high frequency currents and high voltages that difficulty is experienced in properly insulating the conductors.

Electrical Pressure and Its Effects.

Given the proper size of wiring and also efficient insulation such as is in general commercial use at present and provided care is taken to prevent accidental breakages and chafing which will cause short circuits little difficulty should be experienced in confining the electricity used for automobile purposes to its intended and legitimate uses.

In enlarging upon the water power theory, the pressure in the water tanks and the pressure generated by the pump has been likened to the pressure represented by the voltage of the battery or of the dynamo. Briefly, voltage means the pressure or tension of the current. In the high tension magneto, for instance, the voltage is "stepped up" through the intermediary of a transformer until it is very high, hence the use of the words "high tension current." Because the voltage or pressure of the current is high, it may be assumed for the purposes of example to have acquired considerable velocity. If a small round ball is rolled very rapidly it will leap over a small depression or an opening in the surface upon which it is rolled. Its momentum is sufficient to carry it over the hole. With the high tension current it is exactly the same. Its stored up energy is sufficient to cause it to leap the gaps of the spark plugs Hence, with high tension currents, which always are seeking a means of escape to the ground, it is more difficult to obtain adequate insulation than it is with low tension currents, the pressure of which is comparatively low.

Voltage and Amperage Elucidated.

The volume of water that flows through the pipes in the water power system, on the other hand, represents the amperage of the electrical system. The ampere is the international unit of electrical volume. From which it becomes apparent that for a given amperage the wiring requires to be of a size sufficient to carry it. The pressure of the current, or the voltage, remains the same regardless of the size of the wire that is used. vide, the induction coil in which upward of 100,000 volts is carried by wire as fine, or finer, than an ordinary hair. The amperage of the induction coil, however (the amperage of the high tension current) is practically nil. In fact, it can be measured only in hundredth parts of an ampere.

But in case the amperage is higher then the size of the wiring must be increased just as it would be necessary to proportion the size of the pipes in a water system to the volume of water required to flow through them in a given time. If, as has been explained, the wiring is too small, much of the current will be lost in generating heat which will be dissipated and cannot be recovered. Incidentally, the heat in itself forms a menace, for it increases the fire risk. Of course, even where wire of adequate size is used, the danger of fire, or of damage to the apparatus, is minimized by the insertion of fuses in the line. The fuses "burn out" when the current is short circuited and the wires themselves ordinarily would become heated and thus break the flow of current.

Storage Batteries Charged by Dynamos.

If, in the water power analogy, no pump were provided, the water, in operating the water motors which represent the lamps, soon all would flow from the upper tank to the lower tank. Similarly, if in the electrical system no dynamo were supplied, the energy in the battery soon would become exhausted and the lamps would go out. From which it becomes apparent that a dynamo is an essential part of any such system. Where no dynamo forms part of the system it then becomes necessary to rely upon some outside source of current recharging the storage battery. This must be either a primary battery or a dynamo, and inasmuch as primary batteries are not suitable for recharging purposes, owing to the exorbitant expense of maintenance, dynamos perforce must be used. The only difference between the large dynamos which generate current for street lamps and trolley cars, etc., and the dynamo which is used for automobile lighting purposes is in size. The one is heavy and massive and operates at slow speed, and the other is small and compact and operates at comparatively high speed.

All dynamos operate on the same principle, and that principle is neither complicated nor difficult to understand despite the general misunderstanding on this point. If a coil of wire, wrapped around a soft iron core, is rotated within a magnetic field, a current of electricity will be generated in the coil. In a magneto, for instance, the magnetic field is supplied by permanent magnets; the armature is formed of a coil of wire on a soft iron core. But the strength of the current that it is possible to generate is dependent to a certain extent on the strength of the magnetic field. For ignition purposes heavy currents are not necessary, and consequently permanent magnets of comparatively small size serve the purpose.

Why Dynamos Have Electro-Magnets.

Where heavier currents are necessary, however, as in electric lighting and engine starting systems, permanent magnets are not sufficient in the sizes which can be used. If permanent magnets of sufficient size to provide sufficient field strength could be used, then a magnet machine, or a magneto, would serve the purpose. It is impossible to magnetize a piece of iron beyond a certain point. When that point is reached the iron is said to be magnetized to saturation. The strength of the magnetic field of a permanent magnet therefore is dependent upon the size of the magnets.

In a dynamo, however, the magnetic field is made to order, so to speak. That is to say, the magnetic field is generated as it is required and may be assumed not to exist except when the machine is running. Instead of permanent magnets being employed, the strength of the magnetic field of which is limited to the magnetic saturation of the iron, field pieces of soft iron wound with many turns of wire are used in a dynamo. When a current of electricity is passed through the wires the soft iron cores become magnetized and their magnetization is in direct proportion to the current which is passing through the wiring and the number of turns of wire there are around the cores. For instance, if a given permanent magnet will lift a certain weight, it may be made to lift a very much greater weight simply by winding it with a number of turns of wire and passing a current of electricity through the wire. Consequently, a comparatively small electromagnet will do the work of a very much larger permanent magnet. Which, briefly, is the raison d'etre of the dynamo. A magneto, so called because it is formed of magnets—permanent magnets—differs from a dynamo in that it has no field winding; otherwise the magneto is substantially the same.

Differences in Dynamo Designs.

Needless to say, there are a great many different styles and types of dynamos, each of which has been developed to perform a certain class of work. There is great variety in field winding and in armature winding, and machines generally take their name from their method of winding. Thus, for instance, a shunt wound dynamo is one in which the field winding is shunted across

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the brushes which collect the current from the armature; in a series wound machine the field winding is placed in series with the armature; similarly, a compound wound machine is a composite of the two. The latter by reason of its many advantages for all classes of work is coming into more general use and it is on this principle that many of the electric lighting dynamos which are designed for automobile work are constructed.

Reversed Dynamos Run as Motors.

A word in reference to dynamos and motors: Every dynamo irrespective of its method of winding—this does not apply to alternating current dynamos, which never are used for automobile work and consequently legitimately may be left out of the discussion—will operate as a motor provided a source of current is available. Shunt wound machines invariably operate as motors in the same direction as they generate current; series wound machines, on the other hand, invariably operate as motors in the opposite direction to that in which they generate current. It is by reason of the fact that every dynamo is an embryo motor and vice versa that combination electric lighting and starting systems using but one motor-generator unit are possible. And despite dissertations to the effect that a dynamo cannot be made to operate efficiently as a motor, or that a motor cannot be made to perform the work of a generator with any degree of efficiency, such is not the case. There may be some slight loss of efficiency—in fact, there must be a loss—but in the case of the apparatus commonly employed for automobile work such losses as occur are so small as to be negligible.

"Shoulders" That Lead to Mischief.

Any sort of a shaft, or spindle, or stem that works in a guide and has longitudinal motion is apt to wear down more or less where friction occurs, leaving a shoulder at each end of the travel. In some cases this shoulder may interfere with operation, as, for instance, in the case of the automobile air-valve of a carburetter, and for this reason a lookout should be kept for a shoulder where it is possible for one to develop.

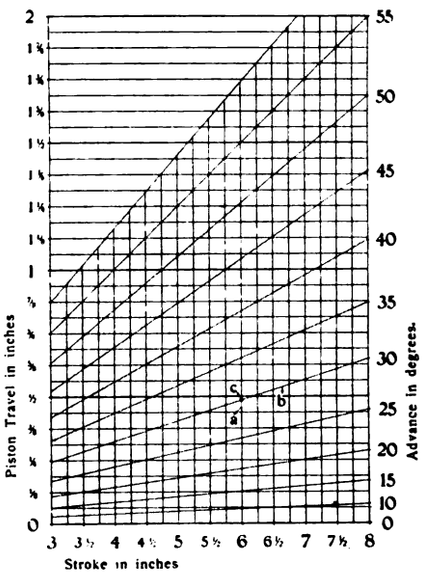
Ready Method of Removing Stud Bolts.

Stud bolts sometimes are formed with only a short shank, so that the use of a wrench in connection with their removal involves the risk of marring the threads. In such a case, the bolt readily can be removed by screwing a nut about halfway down the bolt and locking it in place with a locknut. A wrench then can be applied to the lower nut and the stud easily be removed.

SIMPLIFIED METHOD OF TIMING THE MAGNETO

Easily Employed Diagram That Helps to Determine the Proper Firing Point—Its Use Made Plain.

Barring the desirability of as nearly perfect carburation as is possible, it is doubtful if there is any other factor which has a more definite bearing on engine efficiency than the timing of the ignition spark. Where set spark ignition is provided, there can be little variation other than that afforded by the natural range of advance of



BOSCH MAGNETO TIMING CHART

the magneto, but where hand-timed ignition is employed, there is a possibility that troubles may arise which will require that the timing apparatus be overhauled and a more advantageous setting of the magneto obtained. Often, also, after an engine has been overhauled, several times it will be found of benefit to examine the timing apparatus and to reset it according to the instructions of the magneto manufacturer, for accurate timing is essential if efficiency is to be expected.

As a general rule, magneto manufacturers instruct that magneto installations should be so arranged that the contact breaker opens at a certain point corresponding to a predetermined angularity of the crank throw from vertical, the relation of piston travel to the rotation of the crankshaft depending upon the stroke and the length of the connecting rod. For all practical purposes, however, the length of the connecting rod may be omitted from the calculation, for, except in the case of extreme variations, this factor has so slight a bearing as to be practically negligible. It is a comparatively simple matter, of course, to determine the amount of piston travel in inches by means of a wire inserted through a petcock. It is not so simple, however, to determine accurately the rotation of the crankshaft, and it was to obviate the necessity for lengthy computations that the accompanying diagram, which has been developed by the Bosch Magneto Co. was constructed. With its aid, it is a simple matter to determine quickly the angularity of the crank throw from vertical provided the stroke and piston travel in inches are known.

In the diagram, the relation between the piston travel and the connecting rod length is as 1:4.5, which is the ratio in general use. The vertical lines indexed at the bottom give the stroke in inches, and the slanting lines with the figures at the right give the rotation of the crankshaft in degrees. The horizontal lines and the figures at the left indicate the piston travel in inches. For an example of the use of the diagram, let it be assumed that the stroke of a given engine is six inches, and it is desired to find the piston travel for an advance of 30 degrees.

The vertical lines for the desired stroke are indicated at the bottom, and tracing upward until the slanting line indexed as 30 degrees is reached, the piston travel in inches is indicated at the left side at the horizontal line which cuts the 30-degree slanting line. In this case the figure is slightly less than ½ inch. Consequently in setting a magneto for an engine of six inches stroke, it is merely necessary to insert a wire in one of the pet-cocks and turn the flywheel backwards past top dead center until the piston has receded slightly less than ½ inch. This corresponds to a rotation of thirty degrees of the crankshaft.

Nyberg Produces First Racing Car.

Signifying not that they have entered the racing field but that they have listened to the urgings of one of their aggressive agents on the Pacific Coast, the Nyberg Automobile Works, of Anderson, Ind., just have completed the first racing car that ever bore the name Nyberg. In its general characteristics, it follows the Nyberg lines, but is marked by an unusually short wheelbase of 108 inches, utilizing a long stroke 40 horsepower motor, 4⅛ x 5¼, and is geared 2½ to 1. In a tryout, it developed a speed of 78 miles an hour. After its first appearance in competition in St. Louis, on September 29, the car will be shipped to McKee & Scott, at Fresno, Cal., the Nyberg agents for whom it was built and who plan to enter it in races this fall.

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FEW ALTERATIONS IN NEW BRIGGS-DETROITER

Refining Efforts Centered on Reduction of Weight—Pressed Steel and Aluminum in Place of Cast Iron.

Refinements and slight alterations which mark the revised "edition" of the Briggs-Detroiter, produced by the Briggs-Detroiter Co., of Detroit, are not such as to hide the characteristics which from the first made the car one of the most appealing creations in the popular priced class. Like their predecessors, the new models are built upon a single chassis, and it might require a very diligent search to uncover the differences in construction. There are differences, however, and even though they are slight their incorporation serves as an indication of the thoroughness of the manufacturer in seeking to improve a car that already was undeniably good and which established a name for itself in a remarkably short space of time.

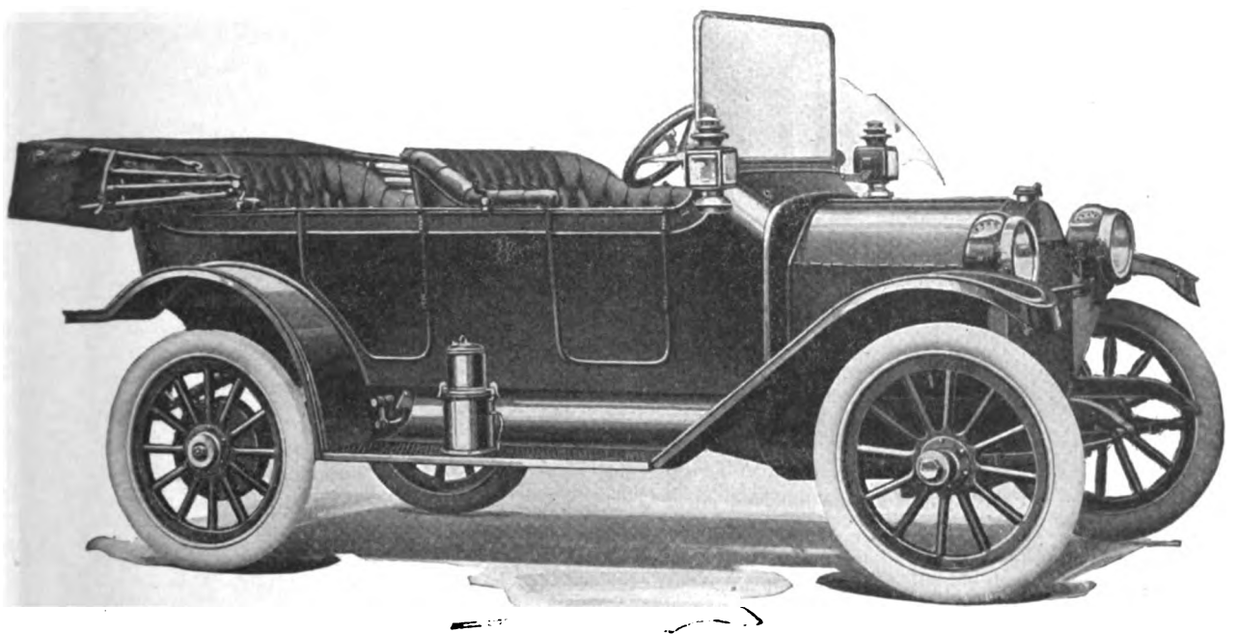
Specifically, the greatest attention in revision has been directed toward a reduction of weight to the minimum consistent with an ample factor of safety. To this end, the toe board, which heretofore has been constructed of wood, now is made of aluminum, which, in addition to enhancing the appearance of the car, serves also to strengthen it and to reduce weight. Pressed steel enters into the construction of the car to a greater extent than before, and in this way efficiency is raised for the simple reason that weight is reduced, the immediate effect being that the engine has less work to perform in providing energy to transport dead weight. For instance, brake drums and flanges now are of pressed steel, the substitution of this material having been carried to a great many other parts, including the oil reservoir beneath the crankcase, which heretofore has been made of cast iron. Other changes which have been made and which are concerned more with the comfort of passengers, include the addition of a new form of ventilators and a slight elongation of the upholstery on the sides of the tonneau.

The three models which are listed are identical with the exception that there is a difference in equipment. Model A, which sells for $850, is equipped with a top and side curtains and dust cover, windshield, the usual complement of acetylene and oil lamps with a generator, tire repair kit, horn, jack and tools. Model A1 lists at $900, the difference in price being accounted for by the more complete equipment, which includes, in addition to the foregoing, quick-detachable-demountable rims, Prest-O-Lite tank, Stewart speedometer and tire irons. The same equipment is listed for model A2, which also sells for $900, with the difference that an Exide storage battery and combination electric and oil lamps take the place of the Prest-O-Lite tank and acetylene lamps. The bodies in each case are arranged to carry five passengers with a degree of comfort that seldom is excelled.

The particular feature of the Briggs-Detroiter—the feature which serves to distinguish it as a particularly valuable $850 worth—is the incorporation of a number of constructional details which seldom find place on cars selling for less than twice its selling price. To enumerate some of the more prominent ones, there is the unit power plant, the platform rear springs, the more than ordinary liberal use of ball bearings, the long stroke motor with its enclosed valves and duplex lubrication system, the substantial multiple disk clutch and the full-floating rear axle. All of which is combined in a manner that reflects undoubted cleverness of design.

The engine, which is literally the heart of a car, is of the four-cylinder four-cycle type, with the cylinders cast in a single block in order to lend rigidity and strength to the unit. The flywheel is enclosed in an extension of the crankcase and the change gear mechanism, which provides three speeds forward and reverse, selectively controlled, is enclosed in a casing which bolts securely to the flywheel housing. Both the shafts in the gearset are carried in large annular ball bearings. By way of obtaining the advantages of the long stroke motor, while at the same time retaining the accelerative powers and "pull" of the more nearly "square" motor, the ratio of bore to stroke has been set at a conservative limit. The bore is 3⅜ inches and the stroke is 4¼ inches. One of the interesting points of design is that the inlet passages project from the inlet side to the exhaust side, the carburetter therefore being located on the opposite side from the magneto, which minimizes the fire risk, and the mixture being slightly warmed before entry into the cylinders.

For ignition a high tension Bosch magneto with set spark point is employed, the assumption being that the average driver scarcely can be expected to know the exact



BRIGGS-DETROITER, MODEL A, WHICH SELLS FOR $850, FULLY EQUIPPED

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place in the stroke of the piston when ignition should take place in order to obtain maximum efficiency. Cooling is by water circulated by the thermo-siphon system. In the lubrication system, the manufacturers have not been content to rely entirely upon ordinary splash. Instead, the splash system has been supplemented by a pump system in which the oil is pumped from the crankcase reservoir through a sight feed glass on the dash to the front end of the crankcase, whence it percolates to the compartments and also to the flywheel housing. The flywheel is designed to throw the oil over the clutch parts and backward to the gearset. The whole power plant is supported at three points on the main frame.

The control system has been made as simple as it is possible to make it. The steering wheel, operating through a heavy worm and sector, is located at the left side in conformity with the growing practice in that respect. Throttle control is located at the top of the steering column. The usual emergency brake lever has been eliminated, its place being taken by a pedal. The left pedal serves to disengage the clutch and also to apply the service brakes. Both sets of brakes are located on the rear wheels, the service brake drum measuring 14 inches in diameter. The rear axle is of the full-floating type, thoroughly ribbed and braced, and is calculated to withstand many times the weight represented by the loaded car. One of its features is that it has been constructed with the experience of leaky axles in mind. The housing is so constructed that it is a physical impossibility for the grease to leak out and run into the brakes.

The frame is of channel section 33 inches in width at the rear and 29 inches in width at the front. By reason of the narrow forward section the car may be turned completely around in a 25-foot circle. The wheels are the regulation wooden artillery type and are shod with 32 x 3½ inch tires. Front springs are semi-elliptic in form and in order to prevent twisting strains and eliminate side-sway are located directly beneath the side frame members. The rear springs, as already mentioned, are three-quarter platform members, all shackles being provided with liberal sized grease cups.

The body of the car is unusually roomy, the front seat being 35 inches in width and the rear seat measuring 42 inches. Dimensions between the seats and between the front seat and the dash also are liberal, the result being that five persons have no difficulty in arranging themselves comfortably. The upholstery is deep and its outer covering is formed of high grade hand-buffed leather.

Tool for Removing Piston Ringes.

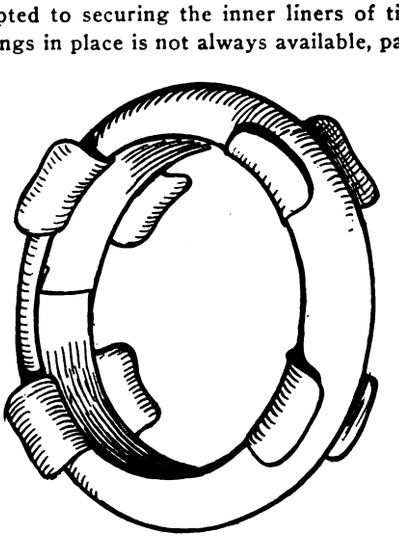
Under ordinary conditions the removal of a set of piston rings is what a repair man calls a "mean job," for it is not only a somephat difficult thing to do, but it entails



no little risk of breaking the brittle cast iron circles. Replacing them is almost as bad. A tool has been specially designed for the purpose, however, by the Sword Mfg. Co., Inc., of New London, Conn., and by its use rings can be removed easily and with a minimum of risk of breakage, and can be just as readily replaced. The device resembles nothing so much as a pair of glove stretchers; that is to say, it has long jaws and a short handle, and the jaws spread apart when the handles are brought together. The tips of the jaws are shaped to take the splits of any variety of piston ring. In use, the end of the tool is inserted in the split of the ring, when pressure on the handles spreads the ring, which can then be slid off the piston. The rings are replaced in their grooves quite as easily, obviously.

Tire Liner That Vulcanizes Itself.

The particular kind of cement that is best adapted to securing the inner liners of tire casings in place is not always available, par-



ticularly in small towns, and for this reason delay and inconvenience may be caused when a casing requires re-lining. To meet just such emergencies, the Hagstrom Bros. Mfg. Co., of Lindborg, Kansas, has developed and marketed a self-vulcanizing inner liner that is complete in itself, requiring no special cement, for the reason that its outer surface is covered with a coating of pure raw rubber cement. In applying the liner the cemented surface is washed with gasolene to remove the protecting soapstone, and the inner surface of the casing is cleaned in the same fashion, after which the casing is inserted. There are eight flaps projecting from the edges of the liner, four on each side, spaced equally, and these are turned up over the beads of the tire, where they are gripped by the clincher. The cement is vulcanized automatically by the ordinary heat of the tires generated on the road.

Spark Tests That Endanger Insulation.

A good spark coil with a normal current flowing through the primary winding is capable of producing a spark of considerable length in the open air—much longer than is required for even the hardest service in ignition work. It is not intended to do this, however, and when testing the spark with plugs removed from the cylinders the spark should not be forced to jump more than about ⅜ of an inch. In order to jump a gap, the electrical equivalent of pressure has to be pent up in the coil until it acquires sufficient intensity to leap across the air-gap. If there should happen to be a weak place somewhere in the insulation there would be a strong possibility of the current puncturing the insulation instead of leaping across the gap, thus making a short-circuit in the winding of the secondary.

The only reason the current jumps the gap is because it is easier than to pass through the insulation. If puncturing the insulation should be easier than jumping the gap, the insulation will be punctured. Of course, the insulation can be made proof against puncture in case of abuse, but this necessitates bulkier and heavier construction, to say nothing of the added expense, and none of these things are exactly desirable. Therefore the test spark should be kept down to the length mentioned. If the temptation to "stretch" the spark should be yielded to, and the spark should suddenly refuse to jump more than a small fraction of an inch, it can be concluded at once that the hot little blue streak has pricked its way through the insulation, and the proper place for the coil is the place where it was made, for it certainly will need expert attention. The quality of the spark should be judged by its snappiness and fatness, which are of importance in ignition, rather than by length, which is of secondary importance only.

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MOTOR TRUCKS FROM CONTRACTORS' VIEWPOINTS

Why Contractors Are Conservative in Motor Trucking Matters—Radical Changes That Upset Men and Methods—Parts of Second-Hand Electric Truck Used to Build New Machine to Fit in With Contractor's Conditions—Ruggedness Required, Not Speed.

New York is a city of enormous building activities. New structures are constantly going up and old ones coming down; subways, tunnels and other excavations follow each other in rapid succession, and there is always "something doing," in the vernacular. Obviously a great many contracting firms are kept busy by this incessant round of construction work, and equally obviously an enormous number of horses and heavy trucks are required to transport the veritable mountains of brick, tile, terra cotta and concrete, as well as structural steel, timber and the thousand and one different kinds of building material that go into skyscrapers and subways.

Contractors Hesitate to Take Up Motors.

It is not to be wondered, therefore, that manufacturers of commercial vehicles, particularly of the heavier types, long have had their eyes and their hopes on the army of contractors who do New York's building up and tearing down, for it would seem that in such work the self-propelled truck would be at its best. Strange to say, however, there appears to be a reluctance on the part of contractors to give up horses in favor of mechanical power, even while they acknowledged the possibilities of the newer form of transportation. Not that there are no contractors using motor trucks; on the contrary, there are quite a number. They are so few, however, as compared with the total, and they seem so much more reluctant than other classes of business to take up the motor that there is reason for some little surprise.

Old Methods Are Deeply Rooted.

The contractors themselves are very reticent as to the reasons for their unwillingness to part with horseflesh. It is more than probable, however, that the great difference that exists between the time-honored horse truck and the machine is a factor of no little weight in causing the contractor to hestitate. For one thing, each contractor usually has a large force of trained men who are the heart and soul of his success; these men aer highly skilled in carrying out their work with horses and the established types of equipment. Changing over to motor trucks means not only considerable trouble and inconvenience to start with, but, what is more, there is strong, unthinking prejudice on the part of the men against the abandonment of the animals with which they have become so familiar, either through fear of "losing their jobs" or, if not that, the belief that they cannot learn to handle the machines successfully. Even the superintendents, who are far from being worried by such considerations, hold back and cast admiring and appreciative glances at their powerful, "chunky" horses.

Believes Horses Belong in the Pastures.

There is one superintendent, however, who has but to shut his eyes for a moment to see a procession of horses wending their way to green pastures—and that at no very distant time. But Superintendent Johnston of the Clarence L. Smith Co., New York, believes the motor truck should be more like the existing types of contractors' vehicles. If this is not possible, it is unquestionable that horses must go anyway; but if motor trucks can be built which will embody the main features of present horse trucks, and so avoid the numerous strange and unfamiliar conditions that are brought about by the installation of motor trucks of the conventional types, it is Johnston's belief that horses will be dispensed with much earlier.

"But do you think it is possible to build trucks that will be much like horse trucks and still give good service?" he was asked.

Motor Truck That Is Like Horse Trucks.

"Do I think so? Why, just wait till I tell you something. We have had motor trucks on our work, and a good many different kinds at that. But they're motor trucks all over, from one end to the other. There's machinery in front and machinery in the rear and machinery in the middle, and it's all very, very different from what the men are used to. We can't treat them the way we would treat a horse truck; it doesn't do to leave it outdoors all the time, and the stable is pretty well filled already. Somehow the regular motor trucks don't appeal to the men as being 'real trucks'—that's exactly the way they express it. I don't mean to say that they are not real trucks, for they certainly are—some of them anyway; but when a driver sees one of his familiar vehicles with a good team hauling a good load he will say admiringly, 'Now there's a real truck!' I never heard a driver say that about a motor truck, except—well, wait till I tell you.

"Some time ago we thought we would do some experimenting on our own hook, and we bought a second-hand Couple-Gear battery truck—one that had been in hard service for many years and was considered pretty well worn out. It had four-wheel drive and four-wheel steer. We sent the wheels to the factory and had them put in first class shape, and the electric motors inside the wheels thoroughly overhauled. Then we went to work and built an ordinary truck of the kind we use for hauling heavy stone and the like, only we made it a little extra heavy. The rear wheels are 4 feet 8 inches in diameter, and the rear axle is 3½ inches square; it's strong enough to carry ten tons. In the front we put a pair of the Couple-Gear wheels with their axle and steering gear, mounted the controller and steering wheel in front of the seat and put a box for the battery under the platform. The platform is 17 feet long and 5 feet 2 inches wide."

Slow Speed But Big Carrying Capacity.

"How does she work out?"

"Fine," replied Johnston. "Fine. Just wait till you see her. Why, man dear," he continued, warming up, "she's a real truck!" and the superintendent remembered and smiled. "But here's the queer part of it. The truck was originally bought by the people we got her from to carry five tons, driving through all four wheels. We use only two of the same wheels, but we carry six tons as a regular load, and she does it easily. The only difference is in the speed. The old four-wheel drive truck ran about 7½ miles an hour light and 5½ to 6 miles an hour with a five-ton load. Our truck, with two driving wheels, runs 6 miles an hour light and 4 miles an hour with a 6-ton load. That's exactly the speed we want. It suits us down to the ground.

Economical and Easy to Handle.

"Now, you see we have a truck with all the machinery—what there is of it—at the front end. The rear end is all just common truck construction. The men work it

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exactly as they would a horse truck; the platform is braced with big heavy timbers, and they can't hurt anything, though I happen to know that at first they put on as much as 8½ tons, and got away with it. We never think of putting it inside; it stays out in the yard, no matter what the weather is, and it is charged at night through an extension cable. There's a Sangamo ampere-hour meter with an automatic cut-off, so that the current will be thrown off when the battery is fully charged. The machine is twice as easy to handle as a horse truck, and it does at least double the work of the best team we have in the place—and you'll go a long way before you see better horses."

Day and a Half on One Charge.

"How about current consumption? Do you have to 'boost' the battery at noon?"

"Boost? Not much! We don't even charge every night. The battery is a 44-cell 27-plate Philadelphia, with thin plates, and has a capacity of 351 ampere-hours. If the machine is doing light work there's current enough for two days' running, and there's enough for about a day and a half of real hard work. She'll be in in a few minutes now, and you can read the meter for yourself."

Later, when the machine came in from its day's work, the driver said that the work had been rather light, owing to delays in getting loads. The ampere-hour meter showed that but 150 amperes had been consumed, leaving 250 amperes available; therefore no charge was put in. One of the reasons for the current economy of the machine is that the battery is of such large capacity that the average discharge rate is very much below the normal rate of the battery, which of course is conducive to long life and economy. The front drive and steer, in which the wheels always exert power in the direction in which they are moving, is also an important factor, while the Couple-Gear motor wheels are remarkably efficient both electrically and mechanically.

Electricity the Coming Power.

"I have an idea," said Johnston, after the truck had been inspected, "that some of these days everything in our line will be done by electricity. There is something in electric power that appeals to contractors. It's not all imagination, either. Wait till I tell you. Not long ago we finished a contract at Madison avenue and 43d street, where it was desirable to make as little noise and dirt as possible, and what do you think we did? Why, we used electricity for everything. The rock was drilled with four electric rock drills, it was hoisted out of the excavation with an electric derrick and it was hauled away by an electric truck —this one right here. And let me tell you, you never saw a job done better or more cleanly and quietly."

New Truck on Old Wheels.

The Clarence L. Smith Co. still has the remaining pair of wheels from the old truck that was purchased, and these will be utilized in the construction of another front-wheel drive six-ton machine. As was the case with the first machine, all the work will be done in the Smith shops, which are equal to the task of turning out any work that is likely to be called for in contracting work, and a good deal that is not.

A number of trucks of the same general type have been built by the Couple-Gear Co. for service in Boston. InIcidentally, the company has evolved a new and decidedly ingenious name for the machine. The front part, they argue, is an automobile and the rear part is a plain wagon. Therefore, the front part of the word automobile is combined with the rear part, so to speak, of the word wagon, making the new name —Autogon.

Split-pin is Brought Up to Date.

As a means for preventing a nut from backing off a bolt it is a difficult matter to beat the good old-fashioned split-pin which, put into the hole and slightly spread, can be relied upon to stay. It has a drawback, however, in that its extraction sometimes is extremely difficult, especially if the ends are spread wide apart, as they too frequently are. Every chauffeur and repair man and most dealers know this, to their sorrow, for it is no joke to cut a split-pin to bits in an inaccessible place.

But by making a little bend in one place and taking out a curve from somewhere else, the old split-pin has been transformed to a new one and the drawback removed. The result is the Campbell pin, shown in the accompanying illustration, made by A. C. Campbell, of Waterbury, Conn. As the picture shows, the loop at the end of the pin is all on one side and one of the points is slightly longer than the other, and is bent over the shorter end. When the pin is in place a slight blow on the head of the pin drives the short end against the upturned longer end, spreading the pin just to the right extent, which is a decided improvement over wiggling a screw-driver between two tightly-closed parallel points. And when the pin is to be removed a pull with the tang of a file or the like inserted in the loop starts the short end first, allowing the bent end to slip out easily. All the work is done from the head, so there is no need to hestitate before inserting a pin where the point is difficult to reach—



CAMPBELL SPLIT PIN

in other words, in such a place that the insertion of the pin is accompanied by a fervent hope that the necessity for its removal never will arise.

Truss-rods; Their Purpose and Abuse.

The purpose of a truss-rod, whether it be under an axle, under a frame, or anywhere else, is not to carry the whole load or even the greater part of it, but to stiffen the member to which it is attached. Therefore the turnbuckles or other adjustments on truss-rods should not be set up too tightly, lest the strain be more than the rod can withstand.

Misfiring as Cause of Motor Wear.

While it is decidedly unpleasant to run a motor with any of its cylinders missing, it is really worse than unpleasant, for the lack of balance and the consequent vibration are apt to cause a good deal of extra wear and tear and strain.

Dealers Show in a Tented Forest.

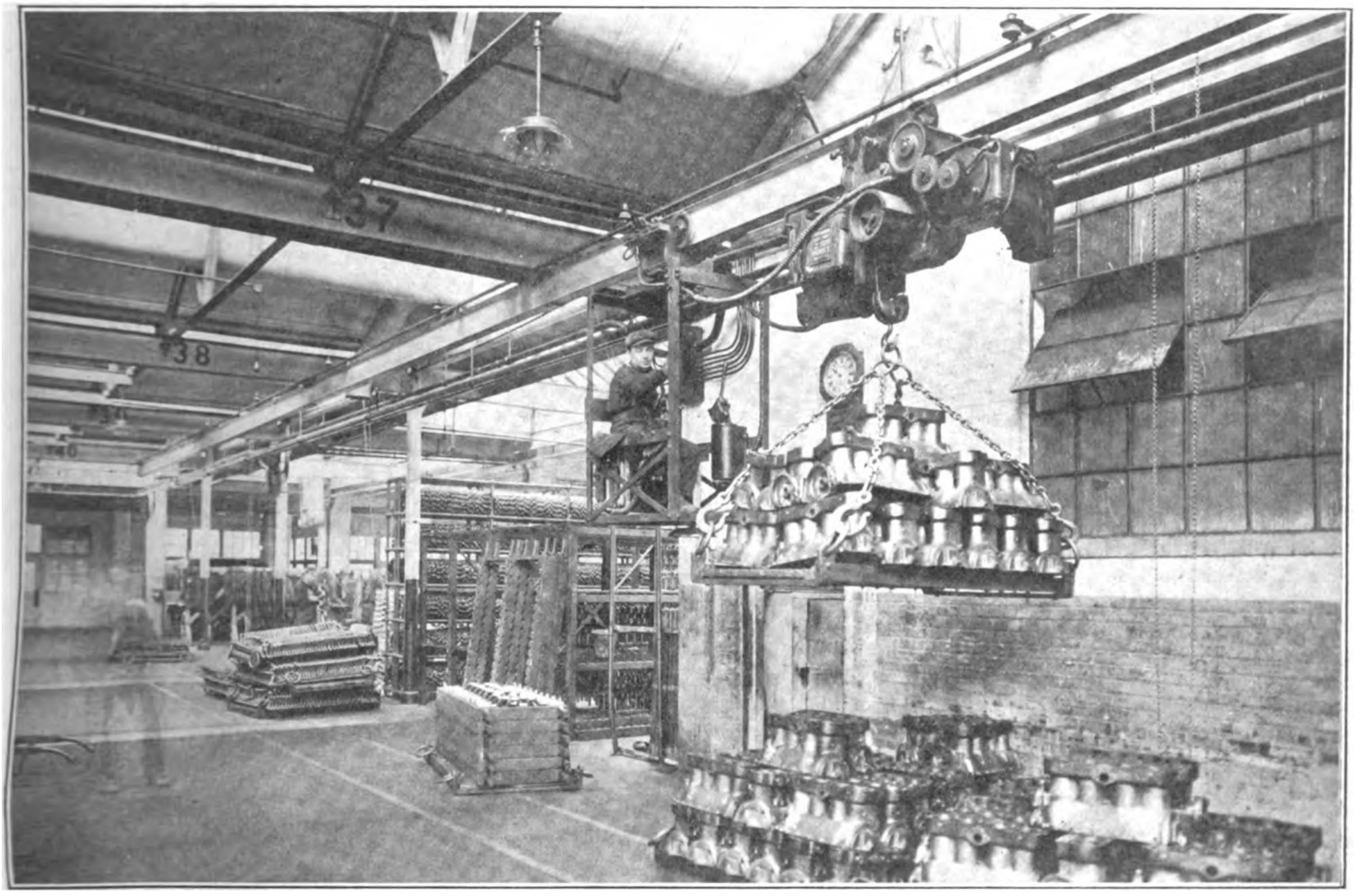
Lacking a more suitable structure, the Sacramento (Cal.) Automobile Dealers' Association conducted its annual automobile show, which was run in conjunction with the California State Fair during the week of September 15-22, in a huge tent erected on the fair grounds. The temporary nature of the structure, however, in no wise limited the attractiveness of the show; decorations there were in plenty, which took the form of a native pine forest, the trees and tree stumps serving to separate the booths of the 12 motor car exhibitors who staged 24 different makes of pleasure and commercial vehicles. Among the exhibitors were: W. N. Hunt, Stevens-Duryea, Cole, Woods electric; Baker & Harder, Velie; Sacramento Motor Sales Co., Winton, Henderson; Graham & Lamos, Peerless, Everitt (Flanders), Baker electric; Oakland Motor Sales Co., Oakland; H. H. Whetstone, Haynes; Studebaker Corporation, Studebaker; George W. Whipple, Marion; Arnold Bros., Hudson; Luttig & Cox, Detroiter; A. Meister & Sons, Kissel, National, Stoddard-Dayton; J. D. Laupe, Buick, Jackson, Federal truck.

When a valve chamber cap of the recessed type is stuck, it usually can be started if, when hot, cold water is poured into the recess, contracting the metal.

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OVERHEAD SYSTEM THAT REDUCES FACTORY COSTS

Traveling Crane Employed in Ford Factory That Carries Heavy Loads With Surprising Swiftness, Lessening Labor and Increasing Efficiency—Bridges Gap Between Machine Shop and Storeroom One of the Developments of Scientific Factory Operation.



MODERN FACTORY TRANSPORTATION METHODS—ONE OF THE OVERHEAD ELECTRIC CRANES IN THE FORD PLANT

To obtain true efficiency requires the application of scientific management in its broadest sense, and in these respects, the shops of the Ford Motor Co., in Detroit, Mich., furnish food for many sermons. In the fewest possible words, the methods of the company comprehend all that is necessary to a quick, efficient and economical result. The immense production which is carried on and the still greater production which is scheduled require that such be the case. Labor-saving devices and machinery which permits of quick and sure handling of finished parts both are absolutely essential, and it goes without saying that in the equipment of his immense shops Henry Ford has not been blind to such considerations.

Without doubt, one of the most interesting of the many ways in which work is expedited is to be found in the system of overhead craneways which form a network over the buzzing and humming automatic machinery in some parts of the shops. Automatic machinery, it should be interpolated, is not human; it takes no count of human ability or endurance; it goes right on turning out finished parts just as fast as the raw material is fed into its rapacious maws. But it requires human ingenuity to devise methods whereby the finished parts can be carted away from the machines so that efficiency, the fetish of the modern shop, can be maintained. It is one of the duties of the overhead crane to bridge the gap between the machine and the storehouse or the assembly room, and bridge it it does and in remarkably short time.

In one of the shops in the Ford works—the floor area best can be expressed in acres—there is one of these overhead cranes, and its capacity for work is phenomenal. It runs on a single overhead track—or, rather, it hangs from the track, and it does not run at all; it seems to fly. If it does not average 20 miles an hour from one end of the shop to the other with its load of two tons and the operator banging away at a gong for all the world like the spirit of a trolley car motorman on high, it most assuredly appears to do so. The operator sits in a tiny coop that is just large enough for him to work his elbows. At one hand there is the lever which controls the current to the traversing motor; another lever, for the other hand, controls the elevating gear.

In operation, a miniature flatcar loaded high with cylinder castings, for instance, is shot beneath the overhead track. Almost

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immediately the operator spots it with his eagle eye, and mid a clanging of the gong and a rumbling of the gearing, the little hanging monorail car swoops down on the unoffending flatcar. It is the work of but a moment to attach a chain from the hoist to four other chains which are fastened to the corners of the top of the flatcar. A simple twist of the operator's wrist and the whole top of the flatcar, load and all, slowly but surely is hoisted clear of the busy machinery. Another twist of the wrist and the two-ton load is conveyed at almost incredible speed clear to the other end of the shop and deposited on the freight elevator, the ultimate destination being the storerooms on an upper floor. Returning, the crane picks up five or six flatcar tops all at once and drops them off one at a time wherever they are most needed. There is no lost time; the crane moves eight or ten times as much at one time as could be moved by any other method and at three times the speed.

FACTORY SHORTCOMINGS UNCOVERED BY ENGINEER'S INSPECTION

Employed to "Look Into" an Engine at the End of the "Running In" Period, He Points Out Minor Faults That Had Developed, Many of Them Due to Lapses in the Factory—Correctives Which He Recommended to Remedy the Derangements.

It is a favorite theory of those who have to do with the construction and operation of motor cars, that no car, brand new, delivers itself of the best that is in it. Generally, it requires from two to eight weeks of more or less constant work before the parts are sufficiently "run in" to insure absolutely proper functioning. In the hands of the average user, if the motor is looked over at all at the end of that time, only the faults which are so pronounced as to be obvious to the novice are corrected; generally all that is done in the way of adjustment, is a general tightening of bolts and set screws. Just what faults may develop during the "running in" period, however, are shown by the case of a medium priced car which was taken down after a month's usage and gone over with a fine tooth comb, so to speak, by an engineer whose ability to do that sort of thing was abundantly proven years ago. His expert criticism and discoveries point the way to betterment in more than one factory.

Scored Cylinders and the Cause.

When the cylinders were removed—it was a six-cylinder car—it was noticed that three of them were quite badly scored and cut; they evidently had seized the cylinder walls, which had caused the abrasion. The trouble was caused by the pistons themselves, which, in the first place had warped oval, and, in the second place, had been ground to too tight a fit. The warping was the effect of non-annealing the pistons after the finishing cut had been taken. Naturally, the correction lay in the insertion of new pistons; the cylinder walls, strange though it may seem, were not scored at all.

Camshaft Bearings Wrongly Adjusted.

All of the camshaft bearings were in bad shape. All three had been fitted too tightly, with the very natural result that the shaft seized and cut up the bearings as well as the shaft itself. Of course the shaft had to be turned down slightly and the bearings bushed. The crankshaft bearings had been fitted perfectly, radially, and the running in process had left them in first class condition. In fitting, however, insufficient allowance had been made for the longitudinal expansion of the shaft with the result that the shaft was slightly scored at the inside ends of the bearings. A very slight amount of the bearing metal was turned off to allow for the expansion, and the shaft was turned slightly to rid it of the rough places. All of the crank pin bearings were in first class condition, as were the wrist pins and wrist pin bearings.

The piston rings were in good condition, but, owing to the fact that they had not been pinned, the slots had worked around so that they were not in the best position for the retention of compression.

Derangements in Valve Mechanism.

One of the valve lifters—it evidently had been made from steel which was not homogeneous in structure and contained a soft spot—had worn hollow at one point, which not only made the valve mechanism noisy, but seriously affected the timing of the valve. Naturally the lifter had to be replaced.

The caps which served to cover the inlet valves had been made just a trifle longer than was necessary, and the heat had deformed the threads which protruded into the compression chamber. The result was that the caps were hard to remove, and when they did come out the threads in the cylinder were slightly marred. Moreover, the sharp edges of the threads which were exposed to the heat of the burning gases had become heated and caused premature ignition and sluggish running.

The inlet valves were in first class shape, which is not surprising in that they are cooled by the entering mixture. The exhaust valves, however, were badly burned and pitted, their poor condition being attributed to the fact that the car was run for quite a time with a carburetter which supplied too rich a mixture. This naturally caused the valves to become overheated, and burning ensued. The carburetter originally supplied was faulty in that the opening in the jet was too large.

With the exception of the pitted valve lift, which gave audible evidence of a fault that needed correction, not one of these faults could be detected unless the motor were taken down. Had the owner simply confined his efforts to tightening up the various bolts and nuts which enter into the make up of the car, however, it is not at all unlikely that before the machine had been operated for a period equal to the "running in" period more serious trouble would have developed.

Valve Lifts as Causes of Trouble.

A prolific cause of motor vibration and unsteady running is unequal valve lift, due to wear of the valve stem ends or the tappets, or to need for adjustment. If one tappet has a clearance of, say, a sixteenth of an inch below the valve stem and another has only the normal thickness of a card, it is clear that the former will open its valve the latest, for the tappet has further to go before it begins to lift the valve; moreover, the closing will be earlier. This is decidedly detrimental to smooth running and the development of full power, and very often a marked improvement can be made by going over the valve lifters carefully and making sure that they all have the same clearance, and neither too much nor too little.

How Grit May Get Into Bearings.

Ordinarily a grease gum is not particularly well protected from dust and dirt, doubtless for the reason that the interior seems quite well protected anyway. It is by no means impossible, however, for grit and dirt to get into the spout and so into the first bearing that the gun happens to be used on.

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ALCO TRUCK DELIVERS THAT LOAD OF SOAP

Reaches California After a Rigorous Trip of 4,070 Miles—Its Record Preserved in Unusual Detail —Conditions Encountered.

They've delivered that soap at Petaluma. It got there on Friday last, 20th inst., after a 596-hour journey straight across the continent on an Alco truck, and the trip demonstrated, among other things, that the driver of a transcontinental truck must be a road engineer and a bridge builder, at least, to say nothing of several other minor accomplishments which he must have at his finger's ends, so to speak. No transcontinental journey in a road vehicle can be expected to be child's play. Even tourists on pleasure bent have found out otherwise. But when a heavy motor truck, heavily laden in the bargain, essays such a passage it is enough to expect that it will reach its destination. Though the Alco truck did not have a particularly hard time of it, neither did its crew have a particularly easy time.

On the afternoon of June 20th, after having headed a mammoth commercial vehicle parade in Philadelphia, the truck started on its transcontinental trip laden with three tons of soap consigned by Charles W. Young & Co., of Philadelphia, to a silk mill in the California city. Fifty-six days later the 4,070 miles between New York, which was the first stop, and San Francisco had been covered and the load of soap was delivered. In the meantime, however, the crew had been beset by many evils, chief among which were the almost impassable roads and the absence of bridges that would support the weight of the truck without bracing and other skillful attention from the crew.

It was between Cleveland and Toledo that the crew had its first experience of bad roads. New highway construction forced the truck over trails of its own through long stretches of sand and mud with scarcely a bit of good road until Chicago was reached. Later, in crossing Western Illinois many miles of gumbo roads had to be negotiated, and rain had made bad conditions even worse. In Iowa, the roads were even worse, and at times they became absolutely impassable. Added to which the heat was excessive, the thermometer registering as high as 100 degrees. It was in Iowa that the crew had its worst experience with weak bridges. Time and again it became necessary to strengthen planking, to brace shaky structures with boxes of soap and to support washed out header beams with the powerful hydraulic jacks and other tackle that formed part of the equipment. In all, some 500 bridges were crossed in the journey across the State, and no less than 100 of them required some kind of treatment to render them safe. In Wyoming, conditions were worse, if that was possible. In eight days there were no less than 10 cloudbursts and the already execrable "roads" were turned into veritable morasses. Steep sided gullies were numerous, and frequently it was necessary to leave the road and blaze the way.

By the way of ensuring an accurate record of the mileage and time on the road, the recording apparatus was more than ordinarily complete. For instance, there was a Sear-Cross speed and mileage recorder, a Servis time recorder, a Coronet hub odometer, and a Veeder odometer. In addition, the truck was equipped with an aneroid barometer, a gradometer, a thermometer, and a compass. According to the daily log which was kept, the total time the truck was on the road was 595 hours 36 minutes, of which 302 hours and 20 minutes, or approximately 51 per cent., represents the time the vehicle actually was under weigh. The remainder of the time was spent in reconstructing roads, digging the truck out of the mud and sand and lending a helping hand to indigent bridges. According to the Servis instrument, the average time on the road each day was 10 hours 29 minutes; the average time in motion, 5 hours 21 minutes. In a single day—the day in which the greatest number of stops were made for road constructing, etc.—the crew was compelled to get down and work no less than 100 times, the unfortunate roads which caused the work being those in Iowa. Altogether some 1,305 stops were made in the 56 days, which figures out at an average of 25 a day.

Despite the strenuous going, however, the truck pulled into San Francisco little the worse for wear, and immediately will be shipped back to Philadelphia, where it will be put back into service.

Start of A. A. A. Tour Postponed.

Owing to the fact that to date but fifteen entries have been received for the coming A. A. A. National Reliability tour from Detroit to New Orleans, which originally was due to leave the automobile capital on October 7th, it has been deemed the better part of wisdom to postpone the start of the event one week, or until Monday, October 14th. In the meantime efforts are being made to "clinch" matters with several manufacturers and cities that have half promised to enter teams, and to this end W. J. Morgan has been sent to Detroit and J. M. Memstreet to New Orleans.

RAIN HURTS AND HELPS MILWAUKEE RACES

Causes Another Postponement, Which Arouses Civic Pride and Opens Purses—Vanderbilt to Start Program October 2.

Whether or no the several days' downpour which necessitated the abandonment of the plan of the Milwaukee Automobile Dealers' Association to conduct the contests for the Pabst and Wisconsin trophies of Friday last, 20th inst., and for the Vanderbilt Cup on Saturday, 21st, was a blessing in disguise, is an open question. Certain it is, that though several thousand spectators who had assembled at the course on Saturday morning last to witness the most interesting event which is included in the program, were greatly disappointed, the postponement paved the way for the making of even more interesting contests, for through its agency both time and money, both necessary to put the course in proper condition, have been forthcoming.

A combination of civic bodies, unwilling to see the first national events which Milwaukee has attempted to father, degenerate into a "fizzle," has allied itself with the dealers association and pledged the funds necessary to keep the force of 300 laborers who, under the county highway commissioner, are putting the finishing touches on the course at work until the Vanderbilt race is called on Wednesday, October 2d. The revised schedule calls for the running of the remainder of the program, the contests for the Pabst and Wisconsin trophies on Thursday, October 3d, and the Grand Prize on Saturday, October 5th.

By way of retaining the entrants, the dealers' association has agreed to "foot the bills" accruing during the two weeks interval. Although the postponement of the speed carnival opens the way for late entries, it is doubtful if any newcomer will be recruited to the ranks. The entries are as follows:

For Vanderbilt Cup—Charles Merz, Stutz; Gil Anderson, Stutz; Ralph DePalma, Mercedes; Spencer Wishart, Mercer; George Clark, Mercedes; Ralph Mulford, Knox; Hughie Hughes, Mercer; Theodore Tetzlaff, Fiat; Harry Nelson, Lozier; N. Pullen, Mercer.

For Grand Prize—Hughie Hughes, Mercer; Ralph DePalma, Mercedes; Theodore Tetzlaff, Fiat; David Bruce-Brown, Fiat; Caleb Bragg, Fiat; Erwin Bergdoll, Benz; Robert Burman, Benz; George Clark, Mercedes; Joe Horan, Benz; Spencer Wishart, Mercer; Harry Nelson, Lozier.

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For Pabst Trophy—Hughie Hughes, Mercer; Neil Pullen, Mercer; Spencer Wishart, Mercer; G. Trussell, Fal; H. Hastings, Fal; Mort Roberts, Mason; Joe Nikrent, Case.

For Wisconsin Trophy—H. Herber, Studebaker; Harry Endicott, Mason; Kramer, Mason; Snyder, Mason; Kulik, Ford.

Kyle Stars at Providence Meet.

Not content with receiving only the "small change" with regard to the cash prizes offered, and but a beggar's portion of the glory attaching to the contests, Harry Kyle, Joe Grennon, Henri Hickman and the Cuban, Louis Menenghetti, erstwhile drivers in the E. A. Moross troupe, have struck out for themselves under the management of E. W. Powell. They made their debut Saturday last, September 21st, in the Narragansett Park half-mile track at Providence, R. I., and Kyle played the star part by taking three of the seven events which were run. His victories included a three-mile event for cars with displacements of under 300 inches, in which he drove a Mercer and won in 4:12, a five-mile event for cars with displacements of under 450 inches, which he completed driving the White, in 8:14⅕, and a single mile time trial which he drove in the White in 1:18.

Grennon (Mercer) and Menenghetti (Pope-Hartford) split honors in the remaining events of the program, Grennon taking the handicap and a match race, and the Cuban took the events which were left. The summary:

Three miles, for cars with displacements of under 300 inches—Won by Harry Kyle (Mercer); second, Louis Menenghetti (Pope-Hartford). Time, 4:12.

Five miles, for cars with displacements of under 450 inches—Won by Harry Kyle (White); second, Henri Hickman (Mercedes). Time, 8:14⅕

Three miles, match race—Won by Joe Grennon (Mercer); second, George Cook (Zust). Time, 4:18⅕.

One-half mile, for cars with displacements of 300-450 inches—Won by Louis Menenghetti (Pope-Hartford); second, Joe Grennon (Mercer); third, Henri Hickman (Mercedes). Time, 0:45⅖.

Five miles, for cars with displacements of under 600 inches—Won by Louis Menenghetti (Pope-Hartford); second, Joe Grennon (Mercer); third, Harry Kyle (White). Time, 5:02.

Five miles, free-for-all handicap—Won by Joe Grennon (Mercer); second, Harry Kyle (White); third, Louis Menenghetti (Pope-Hartford). Time, 5:09.

One mile, time trial—Harry Kyle (White). Time, 1:18.

Light Regulator for Ford Cars.

If there is one branch of the motor car industry which, more than another, is wide awake to every opportunity to make motoring an unalloyed pleasure, it is the accessody manufacturing branch, which turns out the thousand and one little conveniences that often are of such utility as to be almost necessities, and some of which sooner or later achieve the distinction of becoming "standard equipment." Every opportunity is seized to make something work a little better, or to make something easier to do, or to make two functions grow where only one grew before, so to speak. A recently developed device of this class is the J. & B. light regulator for Ford cars, and is the product of the J. & B. Mfg. Co., of Pittsfield, Mass., which succeeded the Jacobson & Brandow Co. The object



J. & B. LIGHT REGULATOR

of the regulator is to keep a steady, practically unvarying current flowing to the head lamps, regardless of fluctuations due to varying speeds of the magneto, and in this way keeping the lamps burning steadily and prolonging their useful lives.

The regulator has no moving parts, and consists of two coils of wire mounted on an iron base; there is a terminal on the base for the single wire that conducts the current from the magneto, and two terminals on each coil for the wires leading to the lamps, which are grounded on the other side. By this arrangement the lamps are wired in parallel—that is to say, each is fed directly from the source of current, in contradistinction to series wiring in which the current passes through each lamp in turn, the lamps forming a chain. If wired in series, the breakage of the filament of one lamp interrupts the current and extinguishes all the lamps on the circuit, while if wired in parallel only the broken lamp is affected.

The Ford magneto generates sufficient current to light the lamps to their normal brightness when the car is running about eight miles an hour on high gear. From this speed up to the maximum of which the motor is capable the variation in the voltage of the lamp current is not more than 5 per cent., according to the makers of the regulator.

Cincinnati "Sociability" On Large Scale.

If the number of participants in the "sociability run," conducted on Saturday last, 21st inst., by the Cincinnati Commercial Tribune was a measure, it was a truly sociable affair beyond all shadows of doubt. No less than 175 started, of which number 125 finished the 104-mile run from Cincinnati to Dayton and return. Gasolene cars comprised one class; electrics, with three vehicles in line, the other. Twenty-one prizes in all were offered for the participants who came nearest the average running time of all the participants, which figured at 6 hours and 14 minutes. There also were three prizes for the best decorated cars. Of those who competed in gasolene driven cars, the three best averages were made by J. D. Bruner (National), Clifford Walker (Oakland), W. C. Everhardt (Studebaker 20). Only one of the electrics, an Ohio, finished; it was driven by Miss Helen Schmidt. The other two electrics were disqualified, as were the greater part of the gasolene cars which did not figure as survivors, for failing to come within the maximum running time of 10 hours. The average for the electrics was two hours and 15 minutes slower than for the "gas" class.

Westgard Again Crosses the Continent.

Having twice crossed the continent since he left New York on June 11th last, to map out three transcontinental routes, A. L. Westgard, official pathfinder of the A. A. A., arrived in New York Tuesday last, 24th inst. To date Westgard has mapped out two of the routes, the first known as the Northern Trail, leading from New York to Seattle, Wash., and the second, the Overland Trail, from San Francisco to New York. The third route which Westgard will set out to cover in his Pathfinder car, within a few days, leads from New York to Los Angeles, and will be known as the Midland Trail. Roughly, Westgard has completed 10,000 miles in 105 days, which averages slightly better than 95 miles a day.

To Prevent Turning of Wood Screws.

In rare instances, it is found necessary or advisable to lock wood screws to prevent their backing out. Probably the simpler mode of procedure and one which is certain of accomplishing the purpose, is to drill a hole at an angle through the head of the screw. When the screw has been correctly positioned, a brad should be inserted in the hole and, as it enters the wood at the shank of the screw, the latter is prevented from turning.

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MOROSS'S NEW TALENT RACES AT PITTSBURGH

Although Short Four of His Former Performers, He Successfully Stages Seven-Event Meet—Poor Day for Burman.

Having filled the breaches caused by the defection of Joe Grennon, Harry Kyle and Henri Hickman, who have set up their own "establishment", E. A. Moross promoted a seven-event meet on the Brunots Island track, Pittsburgh, Pa., Saturday last, September 21st, at which his new "talent" was introduced. The affair, however, fell short of the Moross standard in that although Bob Burman was entered in five of the contests, he won but two—the three-mile event for the Remy Brassard and trophy, in which he completed the two heats, driving the Blitzen Benz, in 2:59.85 and 3:09.95, respectively, and the single mile time trial which he completed, likewise in the Benz, in 51.98 seconds, thereby lowering the local track record of 52.80 seconds, made by Oldfield two years ago.

Of the other five events which were included in the program, John Minker (Kline) took both the five-mile event for cars with displacements of under 300 inches, which he completed in 4:58.06, leading home Raimey (Ohio) and Harvey Ringler (Mercer), and a race for cars with displacements of under 600 inches, in which he completed the five miles in 4:52.92. J. D. Kerr (Kline) also gathered the two events for cars with displacements of under 450 inches, in which he completed the five miles in 5:34.65, and a three-mile free-for-all handicap, which he completed in 3:08.80.

No little excitement was stirred up during the Class E event, for cars with displacements of under 600 inches, when Joe Horan (Cutting), who had been trailing behind Minker (Kline) and Burman (Ohio), was blinded by the dust kicked up by the leading cars, and went through the fence on one of the turns. The car rolled over the embankment and turned several somersaults before it finally brought up against a boulder. Horan, who completed the evolutions with the car, was unhurt save for a few minor bruises, but the car was put of running condition for some time to come. The summary:

Five miles, for cars with displacements of under 300 inches—Won by John Raimey (Ohio); second, J. D. Kerr (Kline); third, Harvey Ringler (Mercer). Time, 5:02.82.

Five miles, for cars with displacements of 231-450 inches—Won by John Minker (Kline); second, John Raimey (Ohio); third, Ringler (Mercer). Time, 4:58.06.

Five miles, for cars with displacements of under 600 inches—Won by John Minker (Kline); second, Robert Burman (Ohio); third, Joe Horan (Cutting); out after accident. Time, 4:52.92.

Three miles, for the Remy Brassard and trophy. First heat—Won by Robert Burman (Benz); second, Fetterman (Simplex); third, Harvey Ringler (Mercer). Time, 2:59.85. Second heat—Won by Robert Burman (Benz); second, Fetterman (Simplex); third, Harvey Ringler (Mercer). Time, 3:09.95.

One mile, time trial—Robert Burman (Benz). Time, 51.98.

Five miles, for cars with displacements of under 450 inches—Won by J. D. Kerr (Kline); second, Robert Burman (Ohio); third, J. E. Schaefer (Mercer). Time, 5:34.65.

Three miles, free-for-all—Won by J. D. Kerr (Kline); second, J. E. Schaefer (Mercer); third, John Minker (Kline). Time, 3:08.80.

Minnesota County Has No Motor Cars.

For some time various counties, villages, cities and localities have been claiming large numbers of automobile owners in proportion to population, but Cook county, Minnesota, comes forward with a claim which really places it in a class by itself; it has learned from registration statistics that it owns no cars at all. The State of Minnesota has 21,218, and they are valued at $6,460,220.

Downpour Causes Postponement in Detroit.

Rain, which made the use of the State Fair track impossible, necessitated the postponement of the race meet which was to have been run at Detroit Sunday last, 22d inst., in conjunction with the Michigan State Fair. Although the new dates for the meet have not as yet been announced, it is not at all unlikely that the meet will be held Sunday next, 28th inst.

Sixty-five Cars in the Canal Zone.

The Canal Zone, which is the name applied to that territory contiguous to the Panama canal, has sixty-five motor cars within its limited confines. Of these, all but fourteen are owned by residents of the Republic of Panama. All but one, a motor truck, are touring vehicles.

At a meeting which resulted in the formation of the Forest City (Ia.) Automobile Club, J. B. Conley was elected president, H. F. Thompson vice-president, Elmer A. Henderson secretary and B. J. Thompson treasurer.

FEES IN FLORIDA ARE DECLARED ILLEGAL

State Law Held To Be Unconstitutional, But by a County Court—Points On Which an Attorney Attacked It.

The Criminal Court of Duval county, Florida, has declared the State tax on automobiles unconstitutional in a case which was brought by the State against John E. Hartridge, an attorney.

The question which was brought up is one that has recurred in many other states, and though in nearly every instance registration fees have been declared constitutional, the Florida court took the opposite view. For this reason the case is interesting, but the decision will lack force until it has been passed upon by a higher tribunal. In defending the action, Hartridge contended that the fee required for registration is a tax and not a license, and that, therefore, "chapter 6212 of the laws of Florida, relating to the operation of automobiles on public highways by owners, not for hire, is unconstitutional and void." In fighting against what he styled "double taxation," Hartridge set forth that:

"(a) It is a tax and not a license, and is unauthorized by the constitution.

"(b) It is a double taxation, automobiles being subject to ad valorem taxation aside from the tax sought to be imposed under this act.

"(c) There is no provision for any regulation in the statutes.

"(d) It violates section 16, article III, of the constitution in relation to its title.

The title of the act is to license automobiles and other motor vehicles using the public roads and highways.

"(e) It is unconstitutional because it provides for the tax collector to issue the license, which is a violation of article V, section 1, of the constitution.

"(f) It is an act of revenue and not of regulation."

Dawson Restored to Good Standing.

Joe Dawson, who won the Indianapolis Sweepstakes race at Indianapolis on Memorial Day, and C. E. Shuart, his former manager, have been restored to the "good list" by the contest board of the A. A. A. Dawson's timely reinstatement, coupled with the postponement of the Milwaukee road races, opens the way for him to appear in those events, but whether or no he will do so is a matter which has not yet been decided.

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1,016,522. Starting Device for Explosive Engines. Frank Reynolds, Syracuse, N. Y. Filed Nov. 9, 1904. Serial No. 231,971. (Cl. 123—180.)

1. In an engine of the class described, the combination with the cylinder, piston and igniter, of a manually controlled starting-device comprising a reservoir for storing explosive mixture under pressure and connected to the cylinder, a normally closed valve operative for admitting the explosive mixture into the cylinder, a mechanism for moving the piston to a predetermined position and including means adapted to throw said mechanism out of connection with the engine to allow the piston to remain at rest in said position, means for opening said valve at will while the piston is at rest, and means controlled by the piston moving mechanism for effecting the ignition of the admitted mixture as set forth.

1,016,543. Governor for Gas or Other Engines. John F. Bridges, Alameda, Cal. Filed Dec. 3, 1907, Serial No. 404,906. Renewed Aug. 24, 1911. Serial No. 645,722. (Cl. 121—112.)

1. In combination, a shaft, a fly wheel thereon, means for controlling the transference of energy, a driven wheel loose on the shaft and adapted to transmit power to a load, a lever carried by the fly wheel, a weight on the end of said lever a cam finger carried by the driven wheel, and engaging an arm of said lever, a spring arranged to press said cam finger against said arm to oppose the outward movement of the weight due to centrifugal force, and a connection from said lever to said controlling means, whereby the inward or outward movement of said lever correspondingly moves said controlling means, substantially as described.

1,016,558. Pneumatic Attachment for Vehicles Wheels. Herman Garrison, Chicago, Ill. Filed Feb. 13, 1911. Serial No. 608,293. (Cl. 152—28.)

1. An attachment of the character described consisting of a pneumatic tire of the ordinary construction fitted to the rim of the wheel, and an expansible pneumatic mounted on the wheel in communication with said tire and between the hub and rim of the wheel, said pneumatic comprising a pair of spaced apart plates, a flexible construction extending between the respective edges of said plates, and means to press one of said plates toward the other.

1,016,561. Plunger and Cylinder Packing. Peter Grabler, Cleveland, Ohio. Filed June 2, 1909. Serial No. 499,741. (Cl. 121—108.)

In combination, a cylinder, and a plunger having its bearing surface provided with a plurality of transversely isolated pockets.

1,016,631. Attachment for Automobiles. Frederick A. Howard, Chester, Pa. Filed Nov. 18, 1910. Serial No. 593,008. (Cl. 240—62.)

1. In an automobile, the chassis, and steering mechanism, in combination with a lamp bracket having a vertical stem, a bracket on said chassis, said stem being rotatably, mounted in said bracket, an arm on said stem, a rod connecting said steering mechanism and said arm and a link pivotally connected to said chassis and said arm, substantially as described.

1,016,651. Pneumatic Spring. William H. Staats, Colonie, N. Y. Filed April 22, 1910. Serial No. 557,049. (Cl. 21—50.)

1. The combination with a vehicle frame, an axle, and a leaf spring having its ends attached to the frame, of a casing, open at its lower end, mounted on the upper side of the spring and having in opposite side walls slots that extend to the lower edge of such walls and through which the axle passes, a compression plate mounted on the axle within said casing and having depending guides bearing against adjacent walls of the casing, and a pneumatic cushion arranged within the casing between the top thereof and said compression plate.

1,016,673. Vehicle Wheel. William J. Cunningham, Philadelphia, Pa. Filed Dec. 16, 1910. Serial No. 597,632. (Cl. 152—28.)

1. In a device of the character stated, a rim, a channel member carried thereby, a series of spring members seated in and connected with said channel member, the ends of said members interfitting and depressed to form a seat, a tread member, a frame carrying said tread member, a lug on said frame located in said seat, said channel guiding said frame in its movement and serving as a stop therefor, resilient means for connecting said frame and rim and resilient strips connected with said rim and the sides of said frame.

1,016,675. Explosion Motor. Paul Daimler, Cannstatt, Germany, assignor to Daimler Motoren Gessellschaft, Unterturkheim, Germany, a Firm. Filed June 13, 1911. Serial No. 632,881. (Cl. 123—195.)

1. In combination with an explosion motor, a sparking device, a cooling water pump and an oil pump, each arranged at one end of the motor and one above another, and means whereby said sparking device, water-pump and oil-pump may be mutually and directly driven from the motor shaft.

1,016,693. Spring Wheel. Henry C. Keller, Bondville, Ill. Filed Jan. 29, 1910. Serial No. 540,743. (Cl. 152—51.)

1. In a vehicle wheel, a hub, a series of spokes arranged in pairs and secured thereto, a pair of spoke rims to each of which a spoke of each pair is secured at its outer end, a tire rim of diameter larger than the spoke rims, and resilient members pivoted to said tire rim and to the hub, said resilient members being of greater width for a portion of their length than the space between each pair of the aforementioned spokes, whereby the latter constitute elongated abutments to limit the flexure of said resilient members.

1,016,722. Dirigible Lamp for Automobiles. Robert H. Wallace, New Brighton, Pa. Filed July 8, 1911. Serial No. 637,510. (Cl. 240—62.)

1. In a lamp shifting mechanism for automobiles, a pair of brackets abutting against and provided with means extending in the inner face of the side frames of the automobile at the forward ends thereof, each of said brackets including a top plate bearing upon the top of the frame and projecting inwardly from the frame, the inwardly extending portion of said plate having the free terminus thereof formed with a boss constituting a bearing, and shiftable lamp holders carrying shafts extending through said bearings.

1,016,750. Throttle Mechanism for Automobiles. Charles B. King, Detroit, Mich., assignor of one-half to Ora J. Mulford, Detroit, Mich. Filed July 21, 1910. Serial No. 572,955. (Cl. 21—90.)

1. The combination of an engine operating part, a steering post, a part adapted to slide lengthwise upon said steering post, means for adjusting said sliding parts to different positions along said steering post, a pivoted lever resting against said sliding part, and means connecting said engine operating part and lever so that any movement of said lever shall actuate said engine operating part, and a pedal adapted to impart motion to said lever that shall carry it out of contact with said sliding part, substantially as and for the purpose described.

1,016,810. Pneumatic Suspension Device for Vehicles. John Williamson, Brooklyn, N. Y., assignor, by direct and mesne assignments, of one-third to Harvey E. Randall and one-third to Albert P. Stewart, Brooklyn, N. Y. Filed March 31, 1911. Serial No. 618,181. (Cl. 21—50.)

1. In a vehicle, the combination with the axle and frame member, of a casing, an annular resilient member vertically arranged in the casing and engaging the peripheral wall of the casing, a block in the casing engaging the resilient member by its periphery and freely movable in the casing in all directions to compress the resilient member when moved in any direction in said casing, the casing and block having similar peripheral re-entrant portions, the axle and the frame member being connected with the block and the casing, by the block being secured to one of said two members and the casing at its re-entrant portion being secured to the other of said two members.

1,016,838. Steering Mechanism for Motor Vehicles. Don Curtis Luce, Boston, Mass. Filed Nov. 9, 1910. Serial No. 591,510. (Cl. 21—90.)

1. A steering mechanism comprising a hub having a series of bisymmetrical cams and radial arms between said cams, said arms having transverse slots, U-shaped springs engaged with said slots and confined thereby against sidewise displacement, a locking cup surrounding the hub, the cup and the hub cams forming roll-receiving chambers, each of which is wider at its ends than at its center, rolls in the end portions of said chambers in contact with the springs, and pressed simultaneously thereby in opposite directions toward the central portion of the chambers, an unlocking cup having fingers located in the central portions of the chambers, between the rolls therein, and a spindle engaged with the unlocking cup, and adapted to turn in the hub.

1,016,846. Anti-Skidding Attachment for Wheels. Charles H. Myers, Franklin, Pa. Filed March 20, 1911. Serial No. 615,501. (Cl. 152—14.)

1. In an anti-skidding attachment for wheels, a tread-plate, oblique, relatively diverging flanges and transverse flanges upon the outer face of said plate, longitudinal, inwardly-extending flanges at the lateral edges of said plate, there being slots through said plate, in proximity to said lateral flanges, side-plates bifurcate at one end thereof and formed at the extremity of said bifurcations into hooks arranged at the extremity of said bifurcations into hooks arranged to engage said tread-plates through said slots, and a flexible tension device exerting a tension upon said plates in the direction of the center of the wheel.

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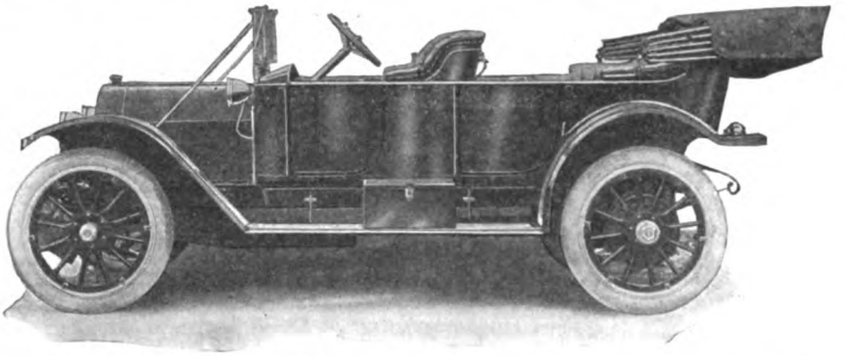
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you would have the backing of the PULLMAN SALES MAKING ORGANIZATION, a twentieth century distribution department that SHOULD be the 51 per cent. part of any manufacturing business.

A perfectly developed "PRODUCER" that spends thousands of dollars (our plan on request) to locate your possible purchaser, to get you in touch, to separate the "live prospects" from the "maybe's."

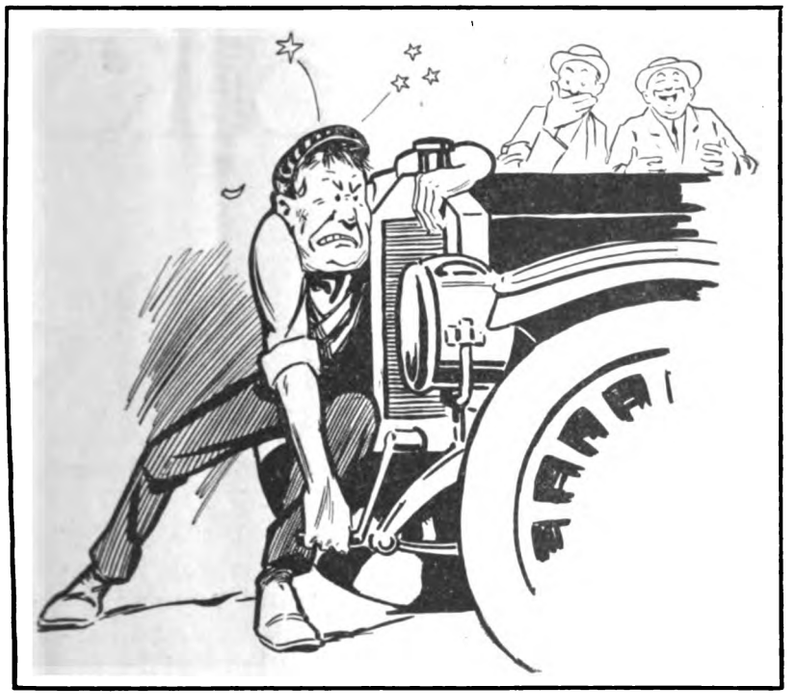
BRIEFLY—We are building 500 extra PULLMANS for 1913. Fifteen hundred in all. Our present dealers have spoken for 1,000, and the increase is for new territory—possibly yours is open.

FOR 1913 WE OFFER THREE NEW MODELS—ALL FULLY EQUIPPED:

4-36	4-44	6-66
$1675	$2150	$2750

PULLMAN MOTOR CAR CO., YORK, PA.

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Isn't It Good Sport

to watch a chap cranking his head off before a laughing, jeering crowd?

And isn't it a satisfaction to know you can step into your own car, push the button of your Electric Self-Cranker—and be off?

WHAT! Haven't Got One?

Then investigate quick—but before you buy, look at the Battery and

Be Sure It's An

GLBA

USE THE CLASS B GLBA BATTERY WITH AN ELECTRIC SELF STARTER

USE THE CLASS A GLBA BATTERY WITH AN ELECTRIC LIGHTING GENERATOR

Write us for full information

WILLARD STORAGE BATTERY CO.

CLEVELAND, OHIO

New York Branch, 136 W. 52d Street **Chicago Branch, 436 S. Dearborn Street**
Detroit Branch, 1191 Woodward Avenue

Depots in all principal cities in the United States, Canada and Mexico

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Foreign Cars of Real Class Use Wire Wheels

To write the names of the foreign cars that use wire wheels is to list almost all the cars of class which are made abroad. In the foreign countries the adoption of wire wheels means only that wire wheels are superior. Foreign manufacturers do not wait until popular demand forces them into a situation. The sole deciding question is that of quality and advisability. Once the foreigners realized that wire wheels, by actual test, saved almost 70 per per cent. of tire wear and that they were superior in every way to wheels of any other type, they immediately adopted wire wheels as standard equipment.

Herewith is appended a list of some of the foreign cars, which use wire wheels, with which the American automobile industry is most familiar.

Metallurgique	Argylls	Calthorpe	Armstrong-Witworth	Hispano	Alcyon
Napier	Talbot	Gregoire	Pallidium	Suiza	Cote
Daimler	Star	Th. Schneider	Peugeot	Lorraine-Dietrich	Leon-Peugeot
Humber	Belsize	Vauxhall	Italia	Mathis	Sizaire-Naudine
Wolsley	Lancia	Stoneleigh	Minerva	Rolland-Pilan	Vinot-Veguingand
Austin	Siddeley-Desy				

THE McCUE COMPANY, Buffalo, New York



Charles Y. Knight, inventor of the Silent Knight engine, in the tonneau of his Silent Knight Wire Wheel equipped Minerva. This is the car which won the Belgium Grand Prix and the cup offered by his Majesty, the King of Belgium. (This photograph used through the courtesy of Mr. Fred W. Sewell, sole agents for the Minerva Wire Wheel equipped cars.)

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EXPERIENCE — SHELDON — RIGHT DESIGN
FACILITIES — AXLES — RIGHT STEEL
"Made in the Largest Axle Factory in the World"

Brake Equipment E-11

The latest and most radical improvement covering chain drive truck braking control and a subject for progressive engineers to investigate.

Both brakes located on rear axles eliminate braking strain on chain, and the bending moment on the jack-shaft.

The inside and outside arrangement show advantages over any other form of construction, keeping down the axle extreme bending moment and allowing bearings to nearly align with sprocket.

Various sections are figured for a truck load of 3000 lbs. or 50 per cent. overload, 80 per cent. being on the rear axle and skidding the rear wheels.

A 50 lb. foot pressure will bring this load to rest in the shortest possible braking distance, with a material safety ratio of 4 to 1 on all material.

There's a lot more to be said about Brake Equipment E-11, and the story is big with interest to every truck builder who is looking for efficiency and strength in this part of the machine.

SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

CHICAGO OFFICE—68 East 12th St. DETROIT OFFICE—1215 Woodward Ave.

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ASSERT! PROCLAIM! EMPHASIZE!

To your customer the fact that Pennsylvania Tires are

Oilproof

and that this greatest of improvements is added to the only tires that have successfully solved the anti-skid problem—

PENNSYLVANIA Oilproof VACUUM CUP TIRES

The question of oil disease in tires has been avoided by tire manufacturers—because no preventative was forthcoming. Now you can offer your customers a tire that's as trouble proof as it is humanly possible to devise.

Oiled roads and pavements, oily garage floors and leaky tanks work havoc with tires. Not many motorists realize this. They only know that their tires often don't last as long as they should under normal use. It's oil disease! Pennsylvania Tires are immune against it. They're the first tires that are.

Stock Pennsylvania Oil Proof Vacuum Cup Tires and point out this splendid selling feature to your customers. Point out our famous anti-skid and long service guarantees, too. These unusual appeals, stimulated by strong consumer advertising, will make these the easiest selling tires of the year.

If you are already a Vacuum Cup dealer revise your orders upward.

If you are not yet handling Vacuum Cups—well, don't be left behind, that's all.

PENNSYLVANIA RUBBER COMPANY, Jeannette, Pa.

(Re-organized Feb. 1. 1910)

Pittsburgh, 505 Liberty Ave.
Kansas City, Mo., 514 East 15th St.
Minneapolis, 34 South Eighth St.
Chicago, 1004 Michigan Ave.
Detroit, 254 Jefferson Ave.
Cleveland, Ohio, 1837 Euclid Ave.

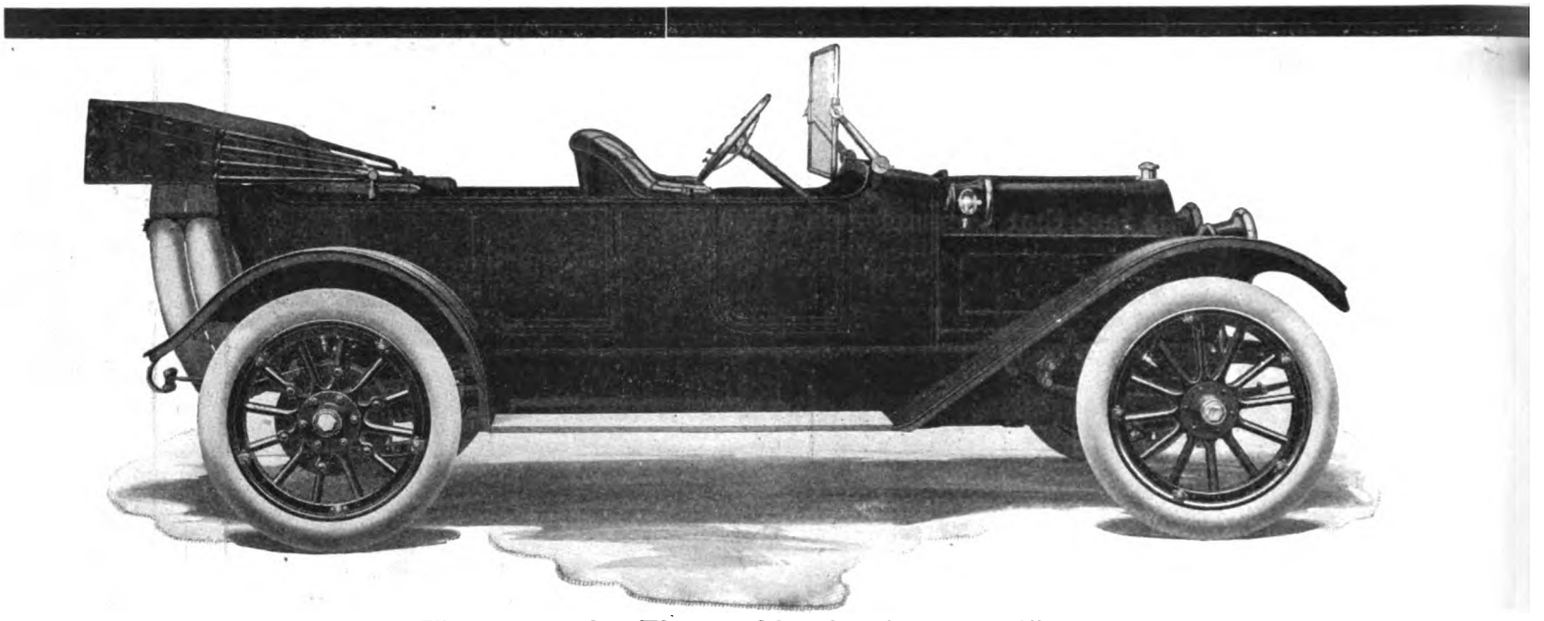
PENNSYLVANIA RUBBER CO. OF NEW YORK
New York City, 1700 Broadway

PENNSYLVANIA RUBBER CO OF CALIFORNIA
San Francisco, 512-514 Mission St.
Los Angeles, 930 South Main St.

An Independent Company with an Independent Selling Policy

We also manufacture the Pennsylvania Inner Tube, the highest grade tube on the market, as well as the famous "503" Inner Tube, the standard medium priced tube, half a million of which were sold last season.

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The Kentucky Thoroughbred — Ames "45"

The Story of a Change

By GEORGE W. YEOMAN

As a rule the beginning of all things was small. But this is different. It is a **big** thing that started **big** and got bigger. For years I had lived and worked in an atmosphere of motor cars. During that time I have become familiar with the merits or otherwise of more than sixty different makes of automobiles—some of the most popular and high-priced in America.

My Discovery — What I Saw

Some few months ago I heard rumors of a remarkable car that was being built in Owensboro, Kentucky. Its story read like a tale from the Arabian Nights. And I doubted—yes sir, I doubted. But still my agents brought me fact after fact, each bearing the ring of truth. So I decided to go to Owensboro to look over this masterpiece in automobiles.

What I saw there startled me. Such a silent, powerful, durable, comfortable and stylish car! I tested it as hard as ever a car was tested. I was determined to find a weak spot. **And I couldn't.**

An American Car for American People

I knew then why F. A. Ames, the greatest carriage builder in the South, had attained his undisputed position. For in building the Ames Automobile he had utilized the knowledge, **skill and experience that 30 years of first class carriage building had taught him.**

I saw in the Ames the one moderate-priced car in America that would be admired as much on Fifth Avenue or Michigan Boulevard as it would be in any other section of the country.

These cars, with bodies which looked as if they came from Brewster's or Kimball's or Cunningham's, surpass anything in the perfection of the carriage-builder's art that I have ever seen. Countless details of strength, refinement and beauty which cannot be secured from the ordinary automobile factory are embodied in this matchless car. The Ames "45" is the ideal American car for the average American.

A Real "Kentucky Thoroughbred"

The Ames "45" is a real "Kentucky thoroughbred." It shows the perfection of the carriage-builder's art in the beautiful lines of the body—in the luxurious hand-upholstered leatherwork—in the honest, careful workmanship attained by two generations of expert carriage builders. This, coupled with the sturdy Continental engine, used by over sixty of America's foremost automobile builders, together with other high-priced equipment, puts the Ames Car in a high-quality class alone.

Read These Specifications

MOTOR—Powerful four-cylinder **Continental**, unit power plant design, en bloc cylinders. Bore 4½ inches, stroke 5¼ inches. Three-bearing crankshaft. Valves enclosed. COOLING SYSTEM—Centrifugal force feed pump. Special design, ball-bearing fan, belt-driven. CARBURETOR—Schebler Automatic non-flooding, Model O 1¼-inch, hot air jacketed. HORSEPOWER—Forty. The motor will develop greater horsepower at high speed. IGNITION—**New Remy** dual system high tension magneto. LUBRICATION—Force feed plunger pump system with constant level. Oil driven direct to main bearings. SIGHT FEEDS—Oil indicators on dash. CLUTCH AND TRANSMISSION UNIT—**Warner** make. Multiple disc clutch. Discs, Raybestos lined, running either dry or in oil. Transmission, selective type, 3 speeds forward and reverse. Shaft mounted on annular bearings. ELECTRIC LIGHTS—Motor-driven dynamo with storage battery reserve. LAMPS—12-inch headlights, 7-inch side lamps, 6-inch tail lamp—all electric lighted. SELF-STARTER—Gas starter furnished as regular equipment. Positive acting, 100% efficient, compressed air or electric starter furnished on request at extra cost. SPEEDOMETER—The widely advertised $50.00 **Stewart** Model B. TOP—Best mohair on substantial frame. Side curtains and boot of same material. COLOR—Black body with gray wheels. AXLES—**Hess**, large size. Front, I-beam drop forged; rear, pressed steel, full-floating type. Both axles an annular bearings. BODY—"Amesbilt," aluminized sheet metal. Fore doors. Inside locks. Five-passenger touring car and two-passenger roadster. GEAR RATIO—3½ to 1. TIRES—34x4 inches, **Goodyear**, oversize "No-rim-cut." SPRINGS—**Special** analysis steel. Front, half elliptic, 36 inches long by 2 inches wide. Rear, three-quarter elliptic, 48 inches long by 2 inches wide. STEERING GEAR—Worm and gear type. Steering wheel, genuine walnut, corrugated, 18 inches diameter. Wheel on left side. UPHOLSTERY—Black No. 1 leather, long-grained, dull finish. Hand upholstered extra deep and luxurious. Filling, best curled horsehair. WHEELS—34 inches diameter, wood, artillery type, large hub flanges, heavy spokes. Rear wheel spokes bossed and bolted to brake drums. RIMS—**Baker**, "Bolted-on"—demountable. Extra rim and tire holder furnished as regular equipment. WHEELBASE—118 inches. DRIVE—Bevel gear, two Spicer universal joints, pressed steel torque arm.

$1635 Fully Equipped

AMES MOTOR CAR CO., Owensboro, Ky.

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Mr. Agent

Get the Great Ames Agency



The Ames "45" Is Easy to Sell Because Its Big Value Is Evident

The Ames Agency is the most liberal and profitable 1913 agency proposition offered in America today. The car is the biggest value to be found anywhere. The men behind it stand for quality, integrity and square dealing. Made by specialists, backed by millions, the Ames has made good from the start. It was an instantaneous success. Ames cars could not be supplied to all who wanted them. But with our new big factory we can now make quick deliveries. Every car has the personal endorsement of Mr. F. A. Ames and is built under the direct supervision of Mr. George W. Yeoman. These two men—each the leader in his line—backed by $2,500,000—offer you a valuable asset in the Ames 1913 Agency.

Note These Sales Points **Long stroke, powerful Continental Motor—the only motor that has won the unqualified approval of automobile engineers the country over—Electric (Dynamo) Lights—Real Self-Starter—Left-Hand Drive—Full Equipment—"Amesbilt" Bodies and Tops. A combination of power, speed, endurance and graceful lines.**

How We Help You Sell the Ames "45"

We believe in the business-building power of co-operation. We look upon Ames Agents as partners in our business.

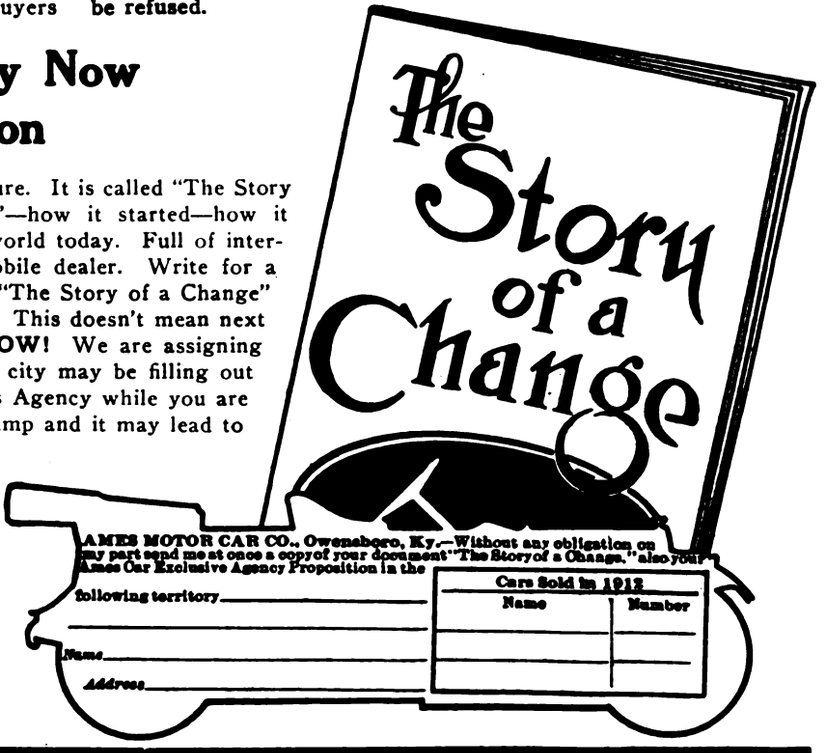
We recognize that we can succeed only in proportion to the success of our agents in selling Ames Cars.

Powerful literature, personal sales letters, carefully developed sales plans, strong newspaper advertising to automobile buyers where we have agencies—every facility known to experienced automobile sales creators is offered our agents.

The Ames Car is built to satisfy the most critical buyer. Ames Agents are expected to see that every customer is satisfied. To this end **no reasonable request that an agent may make of us will be refused.**

Grasp This Opportunity Now Send in the Coupon

We have written a wonderful piece of automobile literature. It is called "The Story of a Change." It tells the complete story of the Ames "45"—how it started—how it was discovered—how it stands supreme in the motor-car world today. Full of interest and information—a document of profit to every automobile dealer. Write for a copy today—it will pay you well. The coupon below brings "The Story of a Change" and our complete agency proposition. Get them both **today.** This doesn't mean next month or next week or even tomorrow but T-O-D-A-Y—**NOW!** We are assigning agencies for the Ames "45" every day. Some dealer in your city may be filling out the coupon below right now—he may get the exclusive Ames Agency while you are hesitating. Investigate—get the facts. It costs but a red stamp and it may lead to big, quick profits.



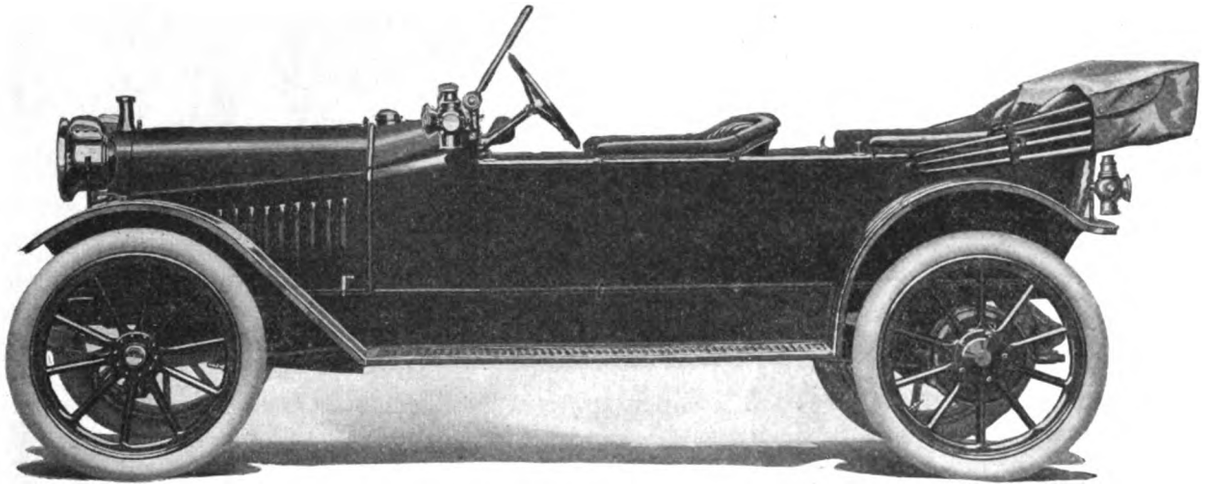
AMES MOTOR CAR CO.
OWENSBORO, KY.

(2)

MAIL THE COUPON NOW

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Hupmobile $975



These Features, and, Hupmobile Prestige—Two Tremendous Sales Forces for 1913

Long Stroke Motor—3¼ x 5½ inches.
Enclosed Valves.
Three Bearing Camshaft.
Unit Power Plant.
Multiple Disc Clutch.
Three Speeds Forward.
Sliding Gears.
Full Floating Axle.
Center Control.
Zenith Carburetor.
Bosch Magneto.
106-inch Wheelbase.
32 x 3½-inch Tires.
Quick Detachable Rims.
Mohair Top with Envelope.
Jiffy Curtains.
Windshield.
Rear Shock Absorber.
Prest-O-Lite Tank.
Gas Headlights.
Oil Side and Tail Lamps.
Tools—Horns.
Trimmings, Black and Nickel.
Standard Color, Black.
Magneto and Camshaft Driven by Silent Coventry Chain.

Here is a car at **$975** built in accordance with the high code of honor which marks the manufacture of the best cars—cars far above it in price.

It claims close relationship with those cars—not in size, because it is a car of lesser dimensions, of course—but in all the ingredients which constitute integrity of construction.

It asks to be set apart and judged, not by the standards its price would suggest, but by the more microscopic analysis that would be applied were a larger investment involved.

Buyers are keen enough to know that two cars of the same price can be far apart in real value.

They know that the difference in value arises from what is in the car, and not what is on it.

In the matter of men, machinery, material and methods, we claim kinship for this car, as we have said, with the very best.

And, in the matter of watchful workmanship, and processes calculated to produce precision, we claim first honors in the Hupmobile class.

We believe the Hupmobile to be a car of longer life and less friction; a car of fewer repairs, a car of greater care in small details; a car of greater efficiency and greater value.

The man who undertakes to sell the Hupmobile on the basis we have outlined here will find his way smoothed and competition easily overcome.

We have just prepared a book, picturing the various processes employed in Hupmobile construction which shows as graphically as the camera can the intrinsic merit and value of the car. We shall be pleased to send you a copy.

HUPP MOTOR CAR COMPANY, 1254 Milwaukee St., Detroit, Mich.

Delivery Wagon on Model H Chassis—$900 f. o. b. Detroit.
"20" Runabout—$750 f. o. b. Detroit, Including Equipment of Top, Gas Lamps, and Generator, Three Oil Lamps, Tools and Horn. 4 Cylinders, 20-H.P., Sliding Gears, Bosch Magneto.

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"The Horn that's Made for the Discriminating"

TUTO HORN

THE TWO TONE HORN

Why Preferred for Standard Equipment.

WHEN any particular device is selected for standard equipment by motor car manufacturers, the varying requirements of the complete sales territory must be considered and the majority of the discriminating customers satisfied, rather than a few of the "extremists."

¶ Freak body designs of limited usefulness and of flashy appearance are similar to the extreme in personal dress. Only the faddists affect or care for such conspicuous designs.

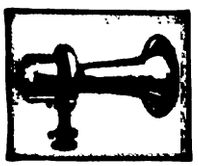
¶ The selecting of a warning signal for the 1913 car models has been partially defined by the demand for an electrically operated device.

¶ It is hardly necessary to add that such a warning device must have actual service utility rather than meet the demands of the few faddists.

¶ For complete signalling, the TUTO horn is the only warning signal that does it all, replacing the bulb horn by its low tone and furnishing a most adequate emergency signal by a more powerful note—either sounded at will and instantly, by the manipulation of one button; a light pressure for the low note, effective fully 90% of the time; a full pressure for the emergency note, demanding attention if the low note should fail.

¶ It is possible to go from the low note to the high note without thought or movement of the hands, merely increasing the pressure on the same button used for the milder signal.

¶ It is this complete signalling service that makes the TUTO horn the choice of the discriminating manufacturer for standard car equipment in preference to the inflexible, one-note loud horn.

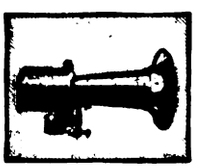


TUTO Horn, $25.00

The Dean Electric Co.

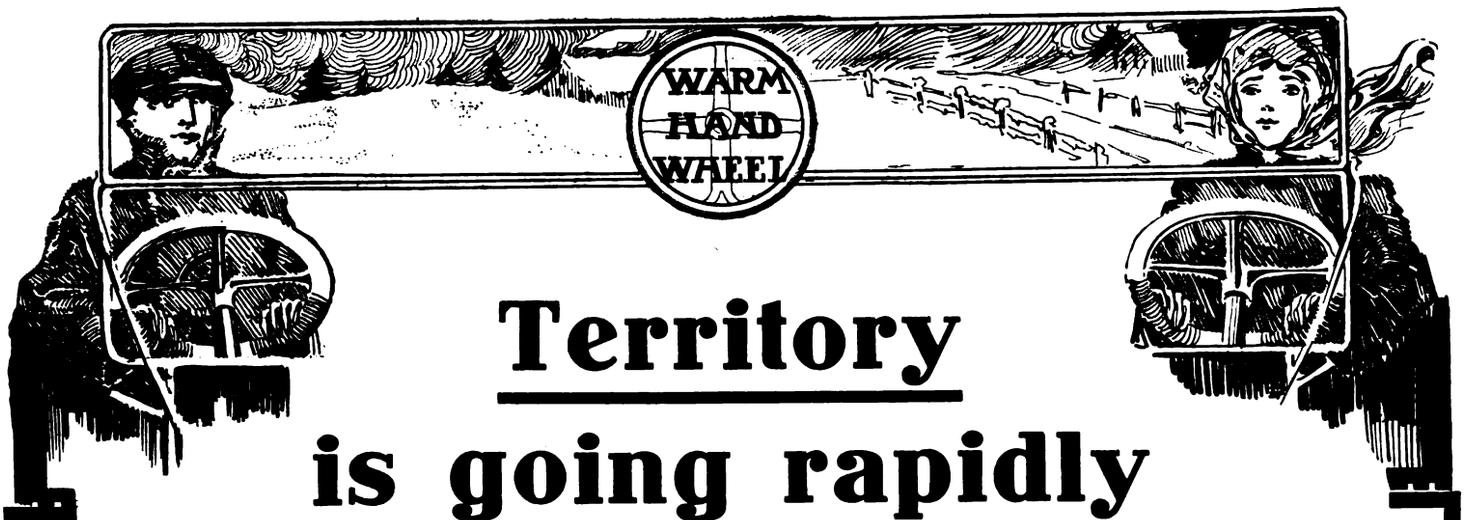
260 Taylor Avenue, Elyria, Ohio

"Look for Dean where Quality's seen"



TUTO-ETTE $17.50

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Territory is going rapidly

Get yours without delay

We knew, of course, that the Warm Hand Wheel would get the attention of dealers—but we were not optimistic enough, because demand is bigger than we had anticipated.

There are plenty of dealers who caught the idea the moment we began to advertise—and more are getting in line every day.

The Warm Hand Wheel will sell wherever there is a driver who has experienced winter discomfort at the wheel—the "frozen stiff" hands or the clumsy gloves.

You, Mr. Dealer, can make him comfortable and happy by installing a Warm Hand Wheel on his car, and in the doing rob his winter driving of half its discomfort—and the total cost to him will be but $10, while your commission will be big enough to completely satisfy you.

The equipment is invaluable to motor truck drivers, and there isn't a concern operating such vehicles that will hesitate a moment to give its drivers the "warm hand," from a humanitarian principle if not as an added factor of safety in winter driving.

Now here is your opportunity—today—not next week or next month. There's a touch of winter's breath in the air already—shortly the cutting wind will send your trade to YOU if you are selling the Warm Hand Wheel—or to your competitor if he grasps the proposition first.

Remember, you can instal this device in a short time—and once on you will have no further trouble, for the Warm Hand Wheel cannot break or get out of order.

With it the driver can steer in the coldest weather without gloves, or with thin skin gloves if desirable.

Isn't that a pretty big "ten dollars" worth?

If you can see the big selling opportunity that hundreds of other dealers have seen—and acted upon—then write today for details.

THE WARM HAND STEERING WHEEL COMPANY

527 Fifth Avenue **NEW YORK**

Patented April 23, 1907
Patented Feb. 11, 1908
Patented April 2, 1912
} Other patents pending.

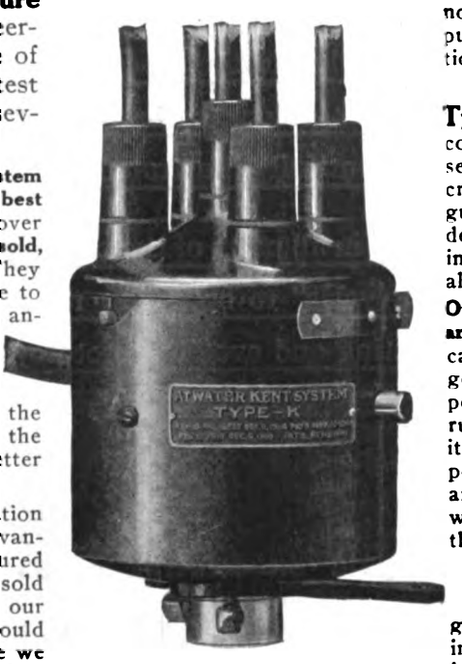
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A New Atwater Kent Ignition System WITH Automatic Spark Advance

This new system, known as the Type K, is noiseless and includes a method of automatically controlling the timing of the spark at any speed from three to seventy miles per hour.

The Type K System is practically silent—much more quiet than a magneto, and gives very much better results. Its efficiency, due to the construction of the contact maker and to the automatic advance, is higher than that of any other ignition device made.

The perfection of this automatic feature is the result of three years of hard engineering work to bring it to its present state of perfection, and we consider it the greatest step in ignition that has been made in several years.



For the last seven years, the Atwater Kent System has held its place as being unquestionably the best battery system in the world. During this time over **seventy-five thousand of our systems have been sold,** and practically all of them are in use today. They have not been sold because we coaxed people to buy them, but because one system has sold another.

During the period of the magneto fad, thousands of our friends who formerly used our system and *know* what it *was*, discarded the magnetos on their new cars and put on the Atwater Kent, claiming they got much better results with much less trouble.

Our manufacturing facilities and reputation have been such that we could have taken advantage of the magneto craze and manufactured magnetos. We could, undoubtedly, have sold large quantities of them, but we knew that our system was better than any magneto that could be built and so stuck to it. As a consequence we know more today about battery ignition than any other manufacturer.

During the seven years that we have been manufacturing our system we have acknowledged that the magneto had the advantage of us on only one point—it generates its own current and therefore needs no battery, but today with the general adoption of electric lighting and therefore a plentiful supply of current from a dependable source which is available for ignition as well, what advantage has the magneto over our system? **Absolutely none!**—and on the other hand, **the Atwater Kent System has many over the magneto.**

This new Type K System has been our pet for over three years. Our whole engineering force has been working on it, making one model after another, perfecting, simplifying, cutting down cost of manufacture, and but few have known that we were working on it.

During the past year we have had our entire tool force making tools, fixtures, and machinery for producing this Type K in quantities. We have refrained from making any announcement until we had our factory in such shape that we could make prompt deliveries, realizing that it was useless to announce a good thing until we could give the public prompt delivery and satisfy the unquestionable demand.

The most wonderful feature of the new Type K System is the automatic spark control. A moment's thought will show that the setting of the spark should not be left to the discretion of the operator—at best, he can only guess the proper timing and even if he knew this definitely, he could not constantly shift his sparking lever to get the full efficiency of his motor at all speeds.

Our automatic spark control is really a self advancer and self-retarder. It begins to operate when the car is running at three miles an hour on the high gear and keeps the spark at precisely the proper position at the highest speed the car can possibly run. Below three miles an hour, the spark is at its proper position so that even though it were possible to run the car on high gear at two miles an hour or one-half mile an hour, the spark would always be correct. In the starting position the spark is properly retarded.

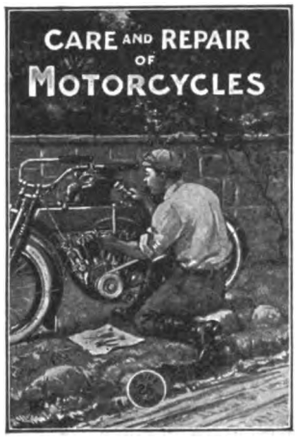
Another feature of the Type K System is that the primary circuit is not grounded, the contact maker being thoroughly insulated from the rest of the mechanism. This is of special value when the ignition current is taken from the lighting circuit.

One glance at the Type K will convince you of its unquestionable superiority in workmanship and of its simplicity and sureness of operation. Every manufacturing detail that enters into this system is as near automatic as possible, so that all parts are interchangeable and absolutely perfect.

Write today for further information, prices, etc.

ATWATER KENT MFG. WORKS, 4937 Stenton Ave., Philadelphia, Pa.

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A trouble saver for the motorcyclists



This book contains more practical advice for the rider, more good hard sense, more suggestions as to how to keep out of trouble, and how to get out of it, than has ever been printed heretofore in any one book.

¶ It fits the coat pocket and it includes free engine clutches, two-speed gears, mechanical lubricators and magnetos, together with special matter on motors, valves, carbureters, fuel and important general subjects, all plentifully illustrated.

¶ Dealers and jobbers in all parts of the country are selling "Care and Repair of Motorcycles" to both new riders and veterans as the best aid in correcting and avoiding motorcycle trouble.



Sent Postpaid on Receipt of 25 Cents

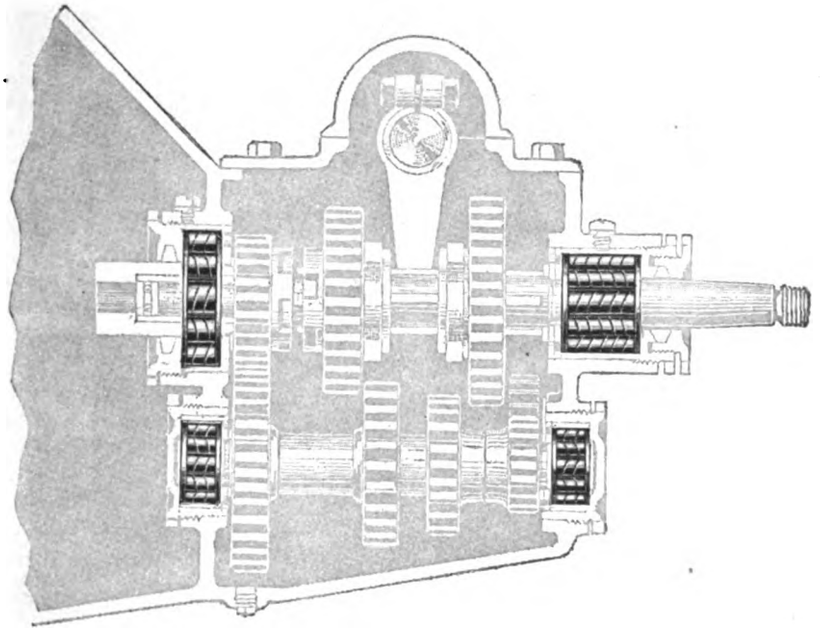
Special Rates to Jobbers and Dealers on Quantity Orders.



BICYCLING WORLD COMPANY
1600 Broadway **New York**

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MAXIMUM PRACTICAL VALUE



FROM EVERY VIEWPOINT the Hyatt Flexible Bearing presents advantages practical as well as theoretical. It is the result of a happy combination of a correct theory and modern manufacturing methods.

A QUALITY BEARING is the sole product of the Hyatt factory—quiet, efficient, simple and durable. It is flexible and non-adjustable. Into it are put the best steels obtainable, all carefully tested in the Hyatt laboratories and heat-treated to give them maximum possible strength.

ADD TO THIS the service which an efficient organization can render to car builder and car user through its sales and mechanical departments. Hyatt service constitutes an absolute insurance against bearing difficulties.

THE STORY IS TOLD in three significant words—"Maximum Practical Value."

HYATT ROLLER BEARING CO.
DETROIT, MICHIGAN

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JENCICK



The car designer who reads this will quickly form a concrete idea concerning Jencick quality—and cost. After that it is largely a question of "Will it pay to get engine durability and efficiency at a higher price."

JENCICK QUALITY

BASE: Manganese bronze, an absolutely rigid metal that must hold crank shaft, cam shaft and other bearings in true alignment. Binding is impossible. Cost per pound 3 times greater than aluminum.

CRANK SHAFT: Krupp Chrome Nickel Steel, extremely hard and cannot wear oval. Retains true diameter forever. Resists crystallization. This material, oil hardened, has a tensile strength of 135,000 pounds per square inch, elastic limit 114,000 pounds. Cost per pound far in excess of nickel or carbon steel.

CYLINDERS: Semi-steel, close grained and hard enough to reduce wear to a minimum. High tensile strength. Uniformly hard. Will maintain true diameter always, under all conditions. Leaking is impossible. Cost of production again high.

PISTONS: Semi-steel or Vanadium cast iron. Principal qualification lightness. Wear-resisting. Practice dictates that piston and cylinders be made from same material. Light weight accomplishing a great foot pound saving. More expensive than cast iron. This goes without saying.

Ordinary Quality

BASE: Aluminum or cast iron, both with considerable spring. Constant torque and vibration will quickly destroy bearing and shaft alignment—result, worn bearings, friction and trouble.

CRANK SHAFT: Nickel or carbon steel. Even if oil hardened cannot approximate efficient service. Shafts wear oval. Pounding takes place and bearings are destroyed. Tensile strength and elastic limit 50% less than the kind we use.

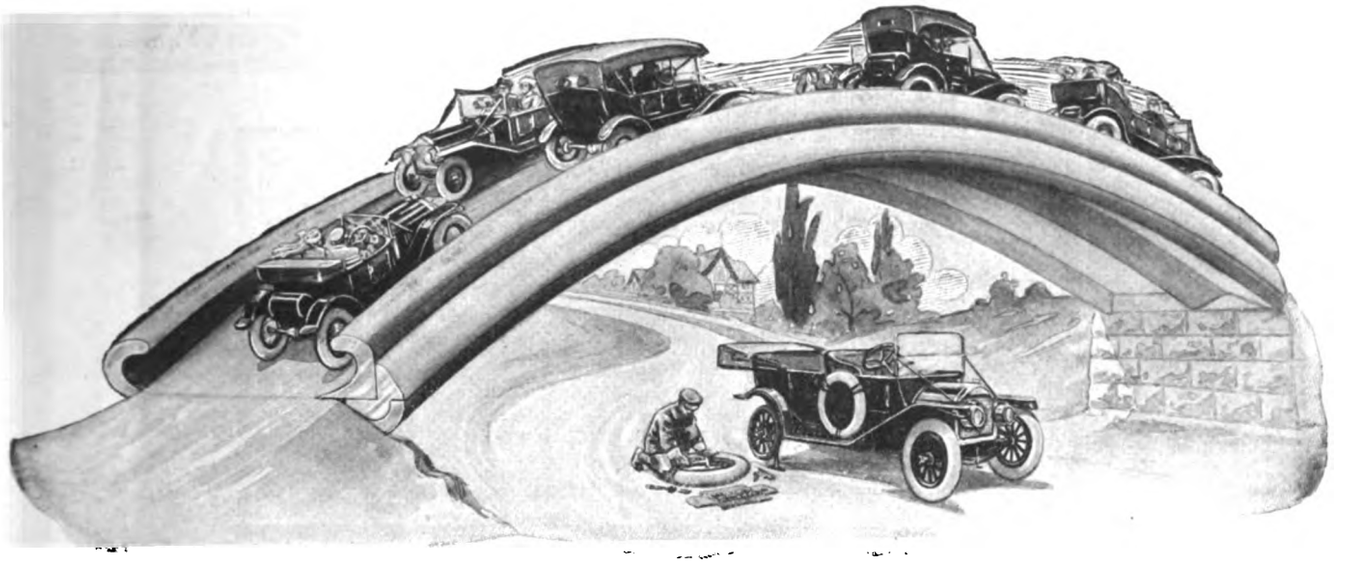
CYLINDERS: Gray cast iron. Light tensile strength. Porous and bound to leak. Wear during first and second year very noticeable. Will show a tendency to rip off foundations especially if built light.

PISTONS: Cast iron or other poor material, conducing to wear and poor service on same lines as indicated in ordinary quality cylinder. Set of four will weigh 4 pounds more than if they are made of better material, meaning a loss of foot pounds running into millions during life of machine.

Here are four out of many QUALITY REASONS explaining why Jencick engines stand in a class by themselves—why they cost more to produce and why the length of service and satisfaction they offer is far in excess of the difference in cost price.

Motor Truck engineers will find the complete story of this engine intensely interesting. Write for the information.

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The Bridge Over Tire Troubles

Forget tire mishaps. They need worry the car owner no longer. There is a bridge of Security and Tire Protection —an Insurance against car delay and tire decay in

Firestone

Quick Detachable Demountable Rims

For All Types of Tire - Clincher or Straight Side

Prevent Car Delay — An ordinary wrench loosens six clamps —and rim slips off. Any tool, with thin, flat edge, will remove locking ring, and tire is detached from rim while latter is on or off the wheel. Puncture or blow-out mean nothing but a simple operation, consuming four or five minutes' time.



Prevent Uneven Wear— Firestone rims have continuous bearing support—give perfect seating to tire. Tire is always in full circle — rounded surface is presented to road. The Firestone wedged shaped clamping ring holds rim always in true.

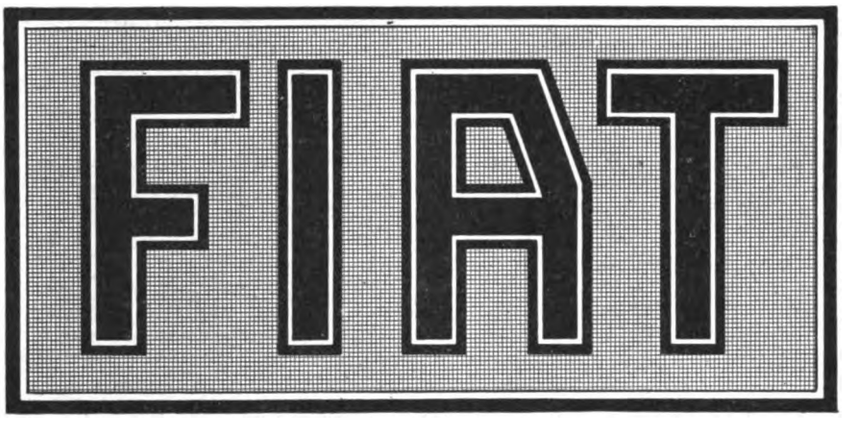
Prevent Tire Decay—Moisture or foreign substance cannot get in to ruin casing or tube. Firestone No-split base prevents.

Light in weight, reasonable in price, the one practical, sturdy, economical, quick detachable, demountable rim made.

Firestone Rims are the regular equipment adopted by a fast growing number of foremost car builders.

The Firestone Tire and Rubber Co.
"America's Largest Exclusive Tire and Rim Makers"
Akron, Ohio, Represented and Sold Everywhere.

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Profit – Prestige – Permanence

There is profit, prestige and permanence in handling **Fiat** Cars. They are more handsome, better designed, better made, of better materials; are more luxurious and better known the world over than any other make.

Every man who has driven a **Fiat,** every man who has sold a **Fiat,** every man who has been identified with the production of a **Fiat,** every man who has taken the time *seriously* to *investigate* and *compare* a **Fiat** with other automobiles is a **Fiat enthusiast.**

Fiat Cars cost no more than high-grade American makes. Think what that means to every dealer and every user!

Fiat values are *far greater*—design, workmanship, materials, equipment, service—all contributing thereto.

Dealers Who Investigate Will Find the Distribution of Fiat Cars an Attractive Business Proposition

PRICES

6 Cyl. 50 H.P.	4 Cyl. 55 H.P.	4 Cyl. 35 H.P.
$5,000	**$4,500**	**$4,000**

When Writing Address Sales Dept. *D*

Turin, Italy **F·I·A·T** **Poughkeepsie, N.Y.**

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To Our Customers—

YOUR 1913 Timken-Detroit Axles will be even better than the 1912.

One year more of experience and study, concentrated on the axle problem, has developed some real improvements.

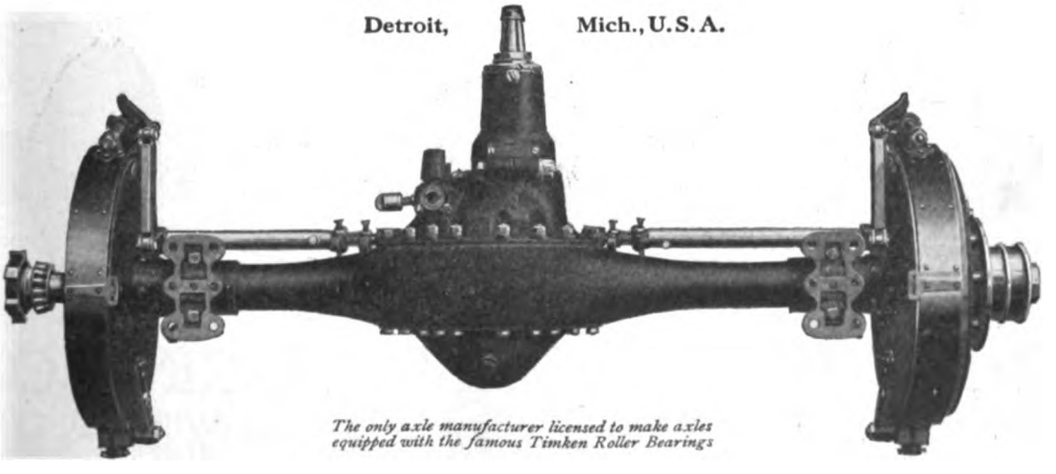
The past year has also seen steady advance in our methods of manufacture. Progress that has made the Timken-Detroit product better with every passing month.

New buildings are being erected to take stil better care of your requirements. With your co-operation in furnishing specifications promptly, we will be able to give you excellent delivery service.

Your patronage has been appreciated and you can count on our organization to a man, during the coming year, to furnish you the best axles and the best service in our power to give.

The Timken-Detroit Axle Co.

Detroit, Mich., U. S. A.



The only axle manufacturer licensed to make axles equipped with the famous Timken Roller Bearings

17

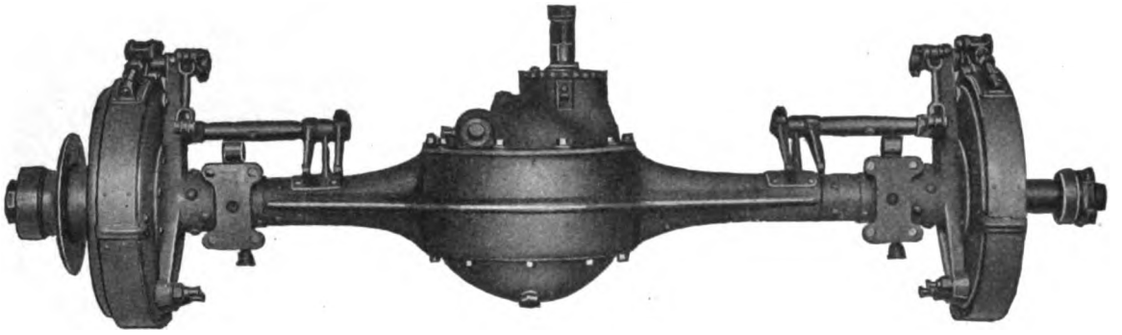
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American

American Axles

American

Give the maximum of efficiency, with the option of bevel or worm drive



Axle efficiency is the basis by which you must measure your car's maintenance expense.

This is especially true of electric vehicles which leave the garage with a fixed quantity of stored energy.

Every unnecessary ounce of friction that must be overcome must be paid for in current.

American Axles, because of their distinctive, patented features—which make for easiest running—assure the maximum of mileage from your batteries.

It is false economy for you to disregard this most important and practical feature.

American Axles now include the Lanchester-Daimler Worm Gear, to which we hold the exclusive rights as axle manufacturers in this country, through the Warner Gear Co., of Muncie, Ind.

They are made with the same superb degree of refinement that characterizes our Bevel Drive axles, well known as the first to be used in electric cars.



THE AMERICAN BALL-BEARING CO.

Edgewater Park and L. S. & M. S. Ry. CLEVELAND, OHIO

American

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COMING!!!

STANWELD
RIMS

THE
STANDARD
WELDING
COMPANY
CLEVELAND

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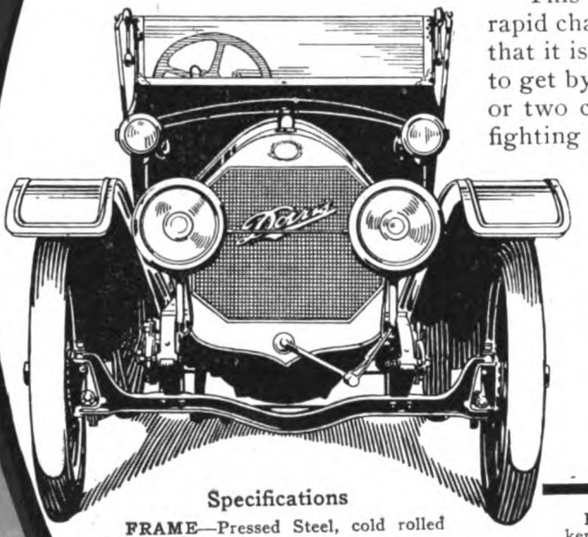
Dorris

Built to Last

Some Facts on the Dealer Question

Has this fact ever been brought to your attention—that most Automobile dealers today are **one-car men**; that in any one territory there are **nearly as many dealers as there are cars represented.**

Yet **all** automobile buyers are **strictly and rigidly** separated into **distinct classes** according to the various prices they can pay for their cars. **Any** one car, no matter how good, or how high or low-priced, can appeal to and can be sold to only ONE CLASS of buyers—**and ANY ONE CLASS is always a very small portion of the market.**



This condition **must** and **will** change in the near future. The rapid change and shifting of agents and agencies everywhere proves that it is becoming constantly more difficult for the "one-car" agent to get by. And the agent of the future instead of depending on one or two cars will unquestionably have a complete line Instead of fighting for a share of a small corner of his market he will handle a car for **every class** of buyer, and therefore will have a fair chance at every prospect be approaches regardless of his needs.

To supply the middle priced car the car of the **logical price,** which permits the best of workmanship and material, and clean cut design—the car chosen by the largest number of experienced motorists, who buy for value, for the largest possible service for the price they pay—to supply this important class of buyers of both pleasure and commercial machines, **we offer you—**

Specifications

FRAME—Pressed Steel, cold rolled strip stock.

MOTOR—Vertical, water cooled, cylinders cast in in pairs with valves in head, 4⅜-inch bore by 5-inch stroke.

LUBRICATION—Constant level splash system, with gear pump and oil reservoir on bottom of crank case. Sight feeds on dash.

DYNAMO LIGHTING—Apple System, with Bosch ignition.

CARBURETOR—Stromberg, water-jacketed admission pipe.

CLUTCH—Special Dorris Dry Plate multiple disc, housed in the fan fly-wheel.

TRANSMISSION—Three-speed, selective type, sliding gear, mounted on Timken Roller Bearings and running in oil.

DRIVE—Propeller shaft with double universal joint and a straight line drive under load.

REAR AXLE—Full Floating Timken with differential and wheels carried on Timken Roller Bearings, adjustable for wear. Differential removable through rear of axle housing.

FRONT AXLE—Drop Forged "I" Beam Section wheels carried on Timken Roller Bearings, yokes and steering arms steel forgings. Steering Connection cross rod behind front axle.

STEERING GEAR—Irreversible screw and nut construction in which one adjustment takes up all play.

CONTROL—Spark and throttle on left side of steering column under wheel.

GASOLINE TANK—Copper, Sixteen gallons under front seat, with pressure pump for emergency.

FENDERS—Sheet Steel with metal shields. Splash guard between running board and frame. Smooth finish.

SPRINGS—Rear spring suspension is a three-point platform. Length of side spring 46 inches; rear, 40 inches. Front spring semi-elliptic, length, 37 inches; width, 2 inches.

BRAKES—Both on rear wheels, 14-inch diameter by 2½-inch face. Foot brake internal expanding; hand brake external contracting. Both equalized.

RADIATOR—Vertical Tube with square intersections, Mercedes type.

WHEEL BASE—121 inches.

TREAD—Fifty-six inches.

CLEARANCE—Under all parts of car, ten inches.

WHEELS—Wheels 36 x 4 inches.

RIMS—Number Three Universal Demountable Detachable Rims.

TIRES—Tires 36 x 4 inches, front and rear. Goodyear, Goodrich or Diamond; optional.

STARTER—Disco Type.

UPHOLSTERING—Finest genuine leather, Rough Rider Springs and ventilated buttons in cushions.

WEIGHT—Thirty-two hundred and fifty (3,250) pounds.

EQUIPMENT—Mohair or Pantasote Top and Dust Cover, Folding Rain Vision Shield, Sixty-mile Stewart Speedometer with season and individual adjustable trip register. Special Tire carriers in rear, one Extra Demountable Rim. Two 12-inch Castle Electric Headlights, two Castle Sidelights and one Tail Light (combination oil and electric). Monoplex Electric Horn, Robe Rail, Foot Rest, complete set Tire Tools, Jack and Tool Kit.

STANDARD COLORS—Touring Car dark blue or Brewster green.

Built To Last

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The Silent Car



The Dorris Line of Pleasure and Commercial Cars

BUILT TO LAST

PLEASURE CARS	COMMERCIAL CARS	
$2500 to $3600	3-4 Ton	2 Ton
Electric Started and Lighted	$2100 to $2500	

The Dorris presents the happiest combination of price and quality of any car on the market. It is roomy and luxurious, smooth-running, easy on long tours, and has a reserve power that makes it one of the most famous hill-climbers on the market.

It is the most exceptional performer built today, which is the real basic reason of its success and universal satisfaction. It gives that smooth, silent, willing service, dependable and uniform year after year, which satisfies the rosiest expectations of the new buyer and rekindles the road-cooled enthusiasm of the veteran motorist.

Eight years of conspicuous success, without a single fundamental change in design—this is the most convincing possible proof of superior construction. And the exceptional record of the car in service abounds in evidence of its stamina and durability.

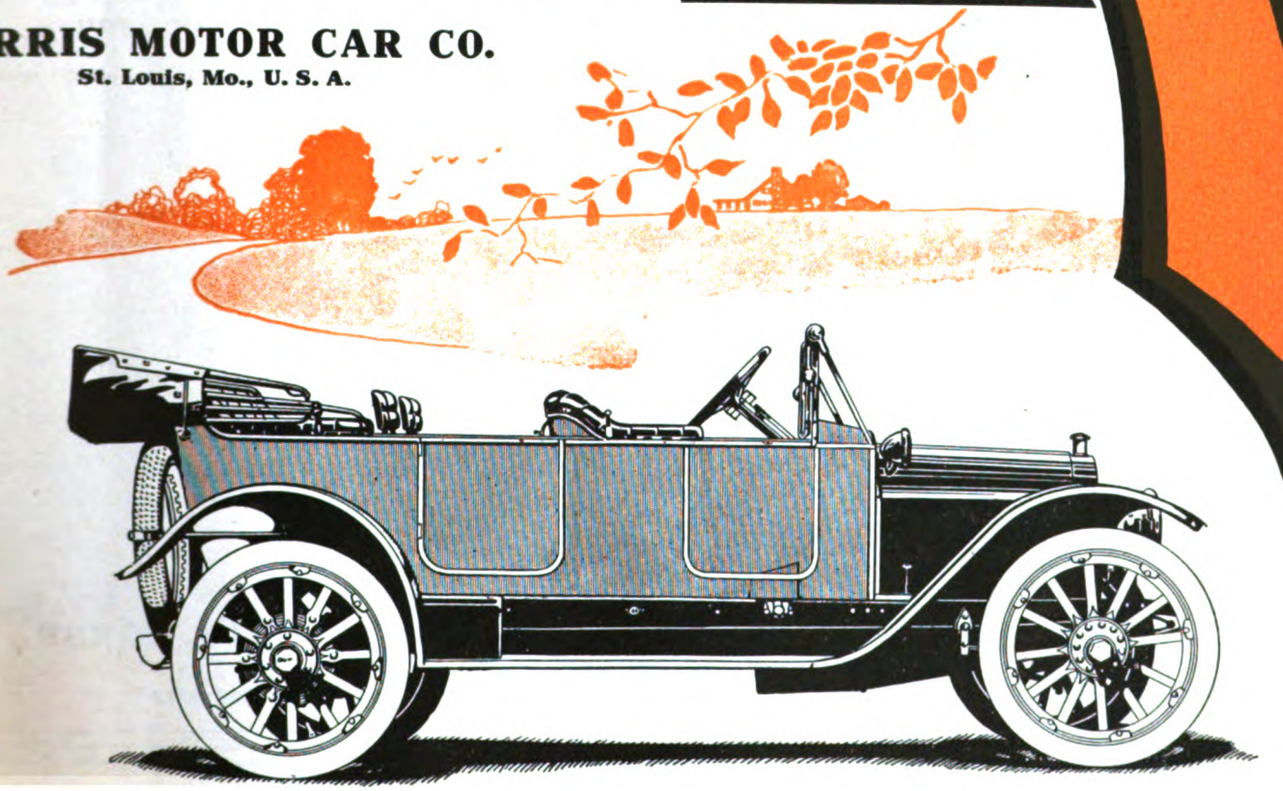
Below are the specifications of the Dorris Model H. Compare it carefully with anything else on the market of anywhere near our price.

Then write us—for we have a proposition which will interest you.

Dorris Commercial Cars

One of the MOST LUCRATIVE FIELDS in the Automobile business today **in every territory** is the Commercial Car end. And there is no limit to the business possible to an energetic man with the Dorris Line. Write us for full information.

DORRIS MOTOR CAR CO.
St. Louis, Mo., U. S. A.



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Knox

Commercial Vehicles
WIN THE CONFIDENCE OF THEIR OWNERS



FACTORIES
Woodhaven N.Y.
ROLLING MILLS TIN PLATE WORKS AND FOUNDRY
Harrisburg Pa.



BRANCH HOUSES
Chicago Boston

L&G Mfg. & Co. TRADE MARK

Lalance & Grosjean Mfg Co.

CABLE ADDRESS "AGATECLIFF" NEWYORK

599 BROADWAY New York. May 24, 1912.

Knox Automobile Company,
1966 Broadway,
New York City.

Gentlemen:-

In reply to your inquiry asking for an expression from us as to our experience in the use of your motor trucks, would state that the fact that we have just placed a new order with you for six 4-cylinder, Model "R-15", 3 ton trucks, should be sufficient evidence that our experience with your trucks in the last five years had been most satisfactory.

We have used Knox motor trucks exclusively for over five years and as we have used no other make, can give no comparison as to the efficiency, up-keep, etc., but it is sufficient to state that our experience with your machines has been so satisfactory we have just placed with you the above order. Our experience with your machines and the courtesies extended by your company have been so satisfactory that we take pleasure in adding our testimonials to the many others you already have.

Very truly yours,
LALANCE & GROSJEAN MFG. CO.

J.H.W./B. President.

Send for Catalogue "W"

KNOX AUTOMOBILE COMPANY, Springfield, Mass.

New York—BRANCHES—Chicago

"Recognized as America's Highest Standard Since the Beginning of the Industry"

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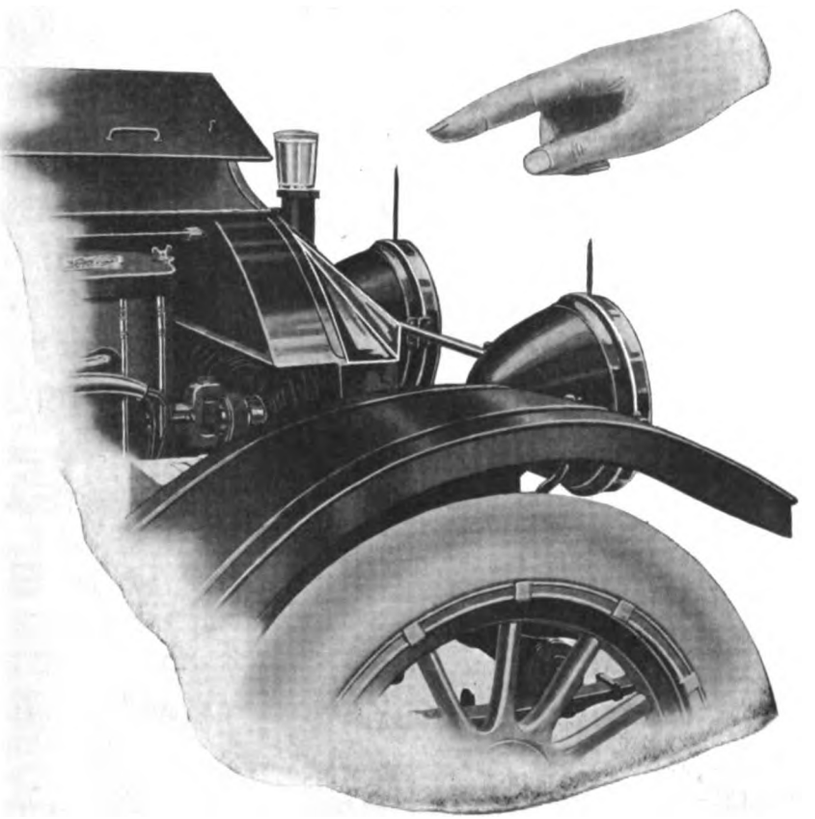
Knox

"Little Six"—The Balanced Car

Aside from its ample reserve power, unexcelled flexibility and rare beauty of design and finish, the new Knox "Little Six," Model 46, embodies many features which mark a new epoch in Motor Car refinement.

One of these highly desirable qualities is correct balance and absence of disagreeable vibration, a result toward which automobile engineers have been striving for years; incorporated as one of the quality "ear marks" of Knox Model 46.

As proof of the above statement we call attention to the following cut showing two pencils balanced on the headlights and a glass of water on the radiator cap with the motor running, taken from an actual photograph.



This is the most exacting test of balance that could possibly be imposed, and proves the thoroughness with which every detail of 1913 Knox cars has been worked out.

Ask for a demonstration of this convincing test at your first opportunity.

Send for Advance Folder of 1913 Models

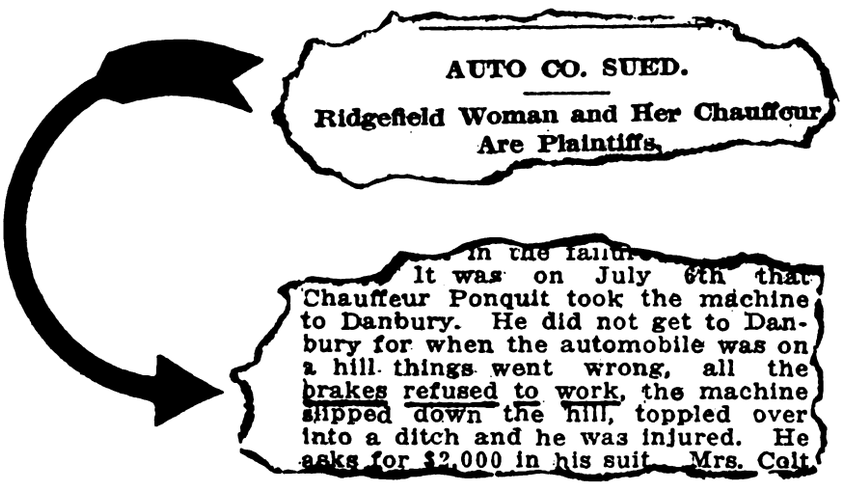
KNOX AUTOMOBILE COMPANY, Springfield, Mass.

New York – BRANCHES – Chicago

"A Demonstration is Irresistible"

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"BRAKES REFUSED TO WORK"



AUTO CO. SUED.

Ridgefield Woman and Her Chauffeur Are Plaintiffs.

In the [illegible] it was on July 6th that Chauffeur Ponquit took the machine to Danbury. He did not get to Danbury for when the automobile was on a hill things went wrong, all the brakes refused to work, the machine slipped down the hill, toppled over into a ditch and he was injured. He asks for $2,000 in his suit. Mrs. Colt

This accident could not have happened if the car had been equipped with DUPLEX brakes.

Many Accidents Are Due to Faulty Brakes

Don't take chances. Don't gamble. Be sure and certain about your brake equipment. Brakes that won't act instantly—that won't hold the car forward or backward—are not the kind of brakes you want.



DUPLEX EXTERNAL BRAKES

Will hold a car from moving backward as well as forward

They are real brakes. They act instantly with slightest pressure. Large braking surface, finest material, best design.

Specify DUPLEX Brakes on the car you buy.
If you have had brake troubles—write us.

THE ROYAL EQUIPMENT COMPANY

436 Housatonic Avenue **BRIDGEPORT, CONN.**

We also make Raymond Brakes, Raybestos Brake Lining and Gyrex, Mixer

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"MADE TO MAKE GOOD AND IT DOES"

THE M & P Electric one ton truck is a tried, proven and found good machine, selling for $1500 to $1600 and giving dollar for dollar more and better service than the mediocre gasoline truck at a price much higher.

Powerful, Speedy, Easily Operated

This vehicle is not an experiment—but a powerful, easily operated and speedy delivery car, with operating cost far below that of the higher priced internal combustion truck.

We find that it is striking a popular chord among a great number of business men who have been looking for an economical and speedy delivery method that could be had without an excessive initial cost outlay.

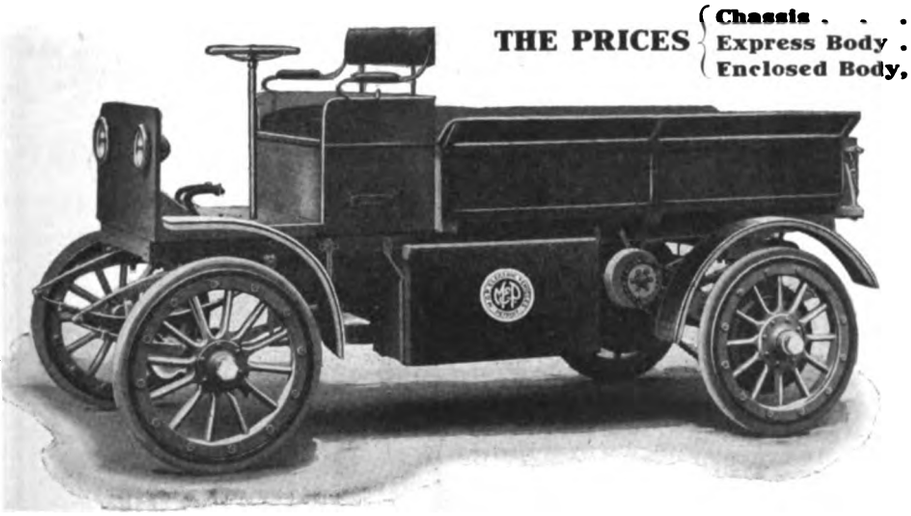
Our dealers are successful—our customers are well pleased—because this handsome, sturdy vehicle is making good wherever sold.

The M & P Electric one ton truck embodies simplified design and high grade material which make the prices from $1500 to $1600 clear out of proportion to its working value—and you cannot side-step the fact that it gives service far in excess to that of high priced gasoline trucks.

Get Our Dealers' Proposition

The proof of this is at your disposal, Mr. Dealer, the minute you want it. Write and make us make good our claim. The returns from your inquiry will be satisfactory.

THE PRICES { Chassis . . . $1450 / Express Body . $1500 / Enclosed Body, $1600



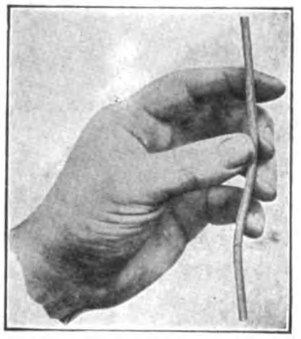
Detroit, Mich.

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Illustrating the Superiority of the Flexible Shaft of the

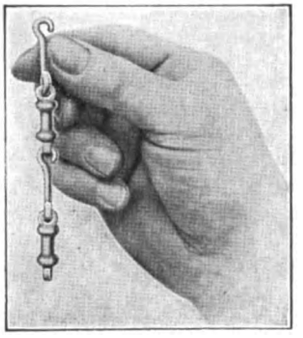
CORBIN-BROWN SPEEDOMETER

"The Speedometer of Permanent Accuracy"



The Wire Strand Shaft

All in one piece. Breaks readily because curves in casing cause metal to crystallize. Impossible to repair. Entire new shaft must therefore be bought.



Corbin-Brown Shaft

Solid link between the eye-links. Solid link gives smooth bearing. Friction minimized. Almost impossible to break. Anyone can replace new link.

Write today for Catalog

Corbin Screw Corporation Division
(American Hardware Corporation)
213 High Street - - - - New Britain, Connecticut
Distributors: New York Philadelphia Chicago

AJAX TIRES

(Guaranteed 5,000 Miles)

Making Good Everywhere

To many motorists automobiles prove a burden through tire expense involved and car owners are now demanding an adequate return in tire value.

Ajax Tires are sold at a price consistent with what they represent in actual value and greater service cannot be obtained from any tire at any price. They have won their popularity entirely on quality and have set an unapproached standard.

Guaranteed for 5,000 miles, Ajax Tires reign supreme.

DEALERS

The demand for Ajax Tires has grown phenomenally and dealers everywhere are stocking up with them to meet the demand for more serviceable and more economical tires. Write today for our new proposition.

AJAX-GRIEB RUBBER CO.
General Offices: 1796 Broadway, New York City
Factories: Trenton, N. J.
Branches in Principal Cities

BENZ

Since the introduction of BENZ cars to the motoring public of America no car has attained such world-wide supremacy as to its construction, standing up quality, and material. The new type of 35 and 50 H. P. BENZ models are the last word in automobile construction.

The noticeable features of this type of BENZ cars include the offset crank shaft, smokeless oiler, and SILENT CHAINS instead of timing gears.

The BENZ Carrosseries are noted for their beautiful lines and thorough comfort.

To those desiring AGENCY of this car the Benz Company will offer special terms. We want RELIABLE, ENERGETIC agents to further our interests for both BENZ pleasure cars and BENZ-GAGGENAU trucks, which today stand recognized by those who know, as the leading 6-ton truck. Wire or write us, no matter where you are.

Our PRICES compete with LEADING AMERICAN makes.

BENZ AUTO IMPORT COMPANY OF AMERICA
250 West 54th Street New York, N. Y.
Direct Branch of Benz & Cie., Mannheim, Germany.

The Hotel of Comfort

The WOODSTOCK

"You can walk from there to anywhere"

Our new addition is ready for occupancy.
We now have 360 rooms with 265 baths.
Write us for descriptive folder with typical floor plan and rate card.
Wire for reservation at our expense.

RATES

Court room with bath, for one, per day.....$2.50
Court room with bath, for two, per day..... 3.50
Outside room with bath for one, per day..... 3.00
Outside room with bath, for two, per day..... 4.00
Outside room with twin beds, for two, per day $4.00



HOTEL WOODSTOCK
127 W. 43d St.
New York
W. H. Valiquette, Manager.

Also
"THE BERWICK"
Rutland, Vermont

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Kelly-Springfield
Automobile Tires

When you buy tires you pay for materials and hope for service.

When you buy Kelly-Springfield Tires you get exceptional service because you get exceptional materials. It is the best rubber composition backed by seventeen years of tire-making experience and by a determination to make good tires.

The name "Kelly-Springfield" has identified the best in tires since rubber was first applied to wheels.

Kelly-Springfield Tire Company, 20 Vesey Street, New York

Branch Offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Cleveland, Baltimore, Washington, Seattle, Atlanta, Buffalo, Akron, O.

Boss Rubber Co. Denver, Colo. | Appel & Burwell Rubber & Tire Co. Dallas, Texas | Bering Tire & Rubber Co. Houston, Texas | Todd Rubber Company New Haven, Conn. | The Hearn Tire & Rubber Co. Columbus, O.



All Tire Manufacturers will only guarantee their produce when filled with air at the recommended pressure.

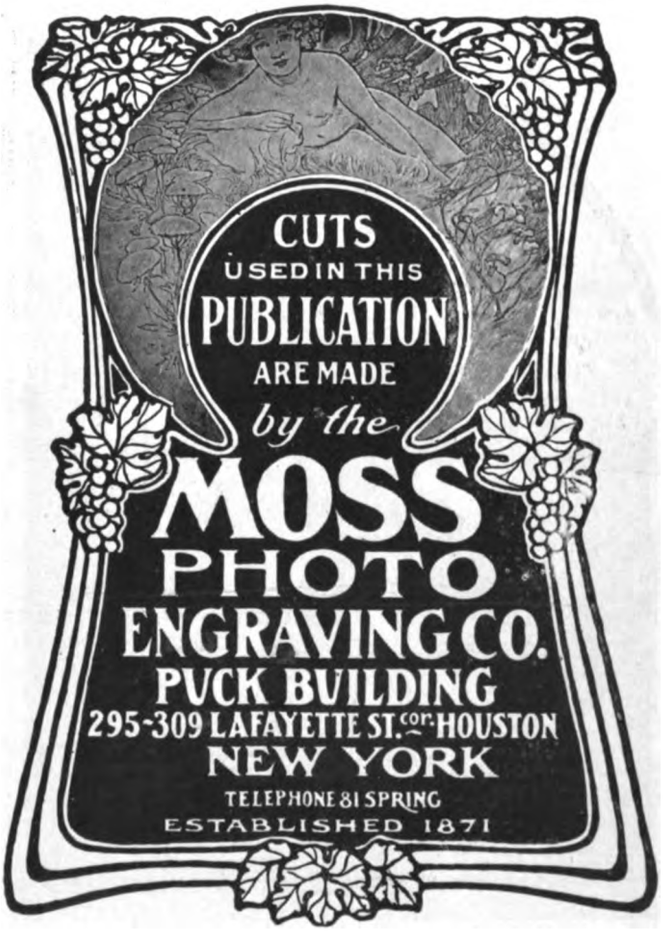
GET A 1912

Twitchell
POSITIVE LOCK STOP
Air Gauge

With it you can get more mileage out of the Tires, because you can always keep them at right pressure.

The Twitchell Gauge is Tire Insurance for a dollar—Order one from your dealer or from us direct.

THE TWITCHELL GAUGE CO.
1256 Michigan Ave. CHICAGO, ILL.



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HILO DE LUXE BURNER

The Largest Automobile Supply House in America

15—STORES—15

This is a Turn-Down Burner, i. e., you can reduce the size of the flame without carbonizing the burner.

The Greatest Gas Economizer and the Longest Lived Burner made.

Throw away your old-style burners and send us 80 cents for a pair of these.

Price 40 cents each, packed in individual boxes.

DO YOU WANT A COPY OF OUR 1912 CATALOG NO. 22?

The Most Complete of the Kind. **Mailed Free on Request.**

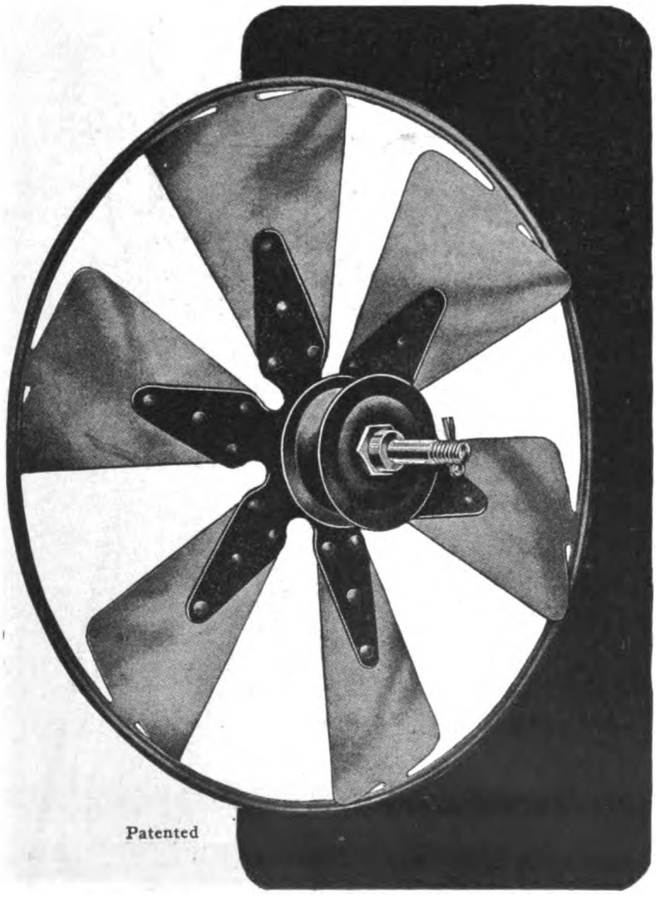
CHAS. E. MILLER

Home Office: 97-99-101-103 Reade St., New York City

MANUFACTURER, JOBBER, EXPORTER AND IMPORTER

Order From Nearest Branch, Address Chas. E. Miller.

NEW YORK CITY—97-103 Reade Street.
NEW YORK CITY—924 Eighth Avenue.
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BUFFALO, N. Y.—824 Main Street.
ALBANY, N. Y.—135 Central Avenue.
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BOSTON, MASS.—202-204 Columbus Ave.
HARTFORD, CONN.—274 Trumbull Street.
DETROIT, MICH.—227-229 Jefferson Ave.
ATLANTA, GA.—66 Edgewood Avenue.
PHILADELPHIA, PA.—318 North Broad St.
NEW ORLEANS, LA.—601-603 Baronne St.
NEWARK, N. J.—274 Halsey Street.
SPRINGFIELD, MASS.—Bridge and Dwight Sts.



Durability and Quietness

These points are having special attention in Sparks-Withington One Piece Blade Radiator Fans; further, we are now equipped to make 1,000 fans in 10 hours. Buy a proven out article and also save by using our standards. Get complete catalog.

THE SPARKS-WITHINGTON CO.

Jackson, Michigan and Walkerville, Canada

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Enjoy Your Ford Car

—get all the luxurious ease and comfort from it that the highest priced car can give.

THE FORD "J. M."

makes this easily possible. Unlike some shock absorbers, it does not arrest or lock the action of the springs—but serves as a perfect auxiliary to them, making riding doubly pleasurable, and cutting down wear and tear on tires and car.

Booklet "W" tells why thirty-five dollars invested in Ford "J. M." Shock Absorbers makes your Ford Car the equal in riding qualities of a five-thousand-dollar one. Write for it *today*.

The "J. M." Shock Absorber Co.

Main Office and Factory

210 South 17th Street, Philadelphia, Pa.

New York, N. Y.....218 W. 84th St.
Chicago, Ill.....1509 Michigan Ave.
Boston, Mass.....222 Eliot St.
Buffalo, N. Y.....Teck Bldg.
Rochester, N. Y.....111 Monroe Ave.
Detroit, Mich....1001 Woodward Ave.
Pittsburgh, Pa.....5919 Baum St.
Atlantic City, N. J.12 S. Virginia Ave.
Baltimore, Md.....10 W. Eager St.
Washington, D. C...1803 M St., N. W.
Pawtucket, R. I., 41 Dexter St.

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Model K2
Price $75

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Have So Many Improvements

that an intelligent comparison of the Argo with any other electric will quickly prove its superiority.

Interlocking Foot Control—Non-Reversible Wheel Steer—Bevel Gear Drives—Low Hung Construction—Long Wheel Base (110 inches) Artillery Wheels (38 x 4 inches)—Motz High Efficiency Cushion Tires—Best Quality Steel Springs—Double Internal Expanding Safety Brakes.

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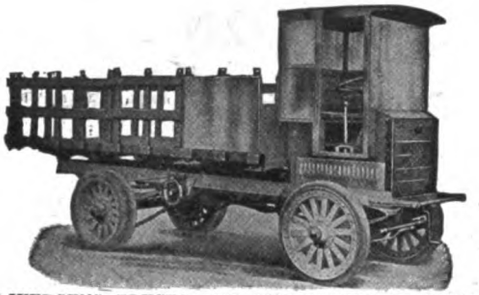
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Lauth-Juergens Trucks are Delivery Insurance

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ONE, TWO AND THREE TON CAPACITY



LAUTH-JUERGENS TRUCKS ARE THE LATEST IN CONSTRUCtion, most powerful in operation and the motors are guaranteed against defective workmanship and material for the life of the truck. They are positively the highest class trucks made. Two cylinder, one-ton, four cylinder, one, two and three-ton. Four speeds forward, Hess-Bright ball bearing transmission made in our own shops of the finest tool steel, three-piece disc clutch, covered by patents owned by us. Send for 1912 Catalog and specifications. Prompt delivery on all models. Large publicity campaign just begun. Our quality will do the rest.

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NEWARK, N. J.—Merchants Motor Car Co., Essex Building.
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The "Schafer" ball bearings are the standard of the world. They have been for years at the pinnacle of merit, and remain there because of exceptional workmanship, and the care taken in every step of the manufacture.

The ball bearings are made of especially analyzed, extraordinarily dense crucible cast steel, that combines uniform hardness with toughness from center to surface. All balls show a wonderfully great crushing strength and any ball showing the slightest defect is promptly rejected.

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DELIVERY dates are of utmost importance. Delay in shipments means loss of money.

We guarantee prompt deliveries.

Warner Quality and Warner eight-year old reputation for making highest class gears is back of the product.

Car makers interested in the Quality and Merit that means absolute safety and satisfaction will do well to write.

We modify our designs to meet detail requirements, or build to approved designs on seasons quantity specifications.

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Speedwell Trucks

2 Ton 4 Ton 6 Ton



The Truck
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combine to give service to the owner.

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ALSO BUILDERS OF
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Touring Car and Roadster Types. 44 h.p. 6 Cylinders. Unit Power Plant, 3-Point Suspension. 122 in. Wheel-Base. 36 x 4 Tires.

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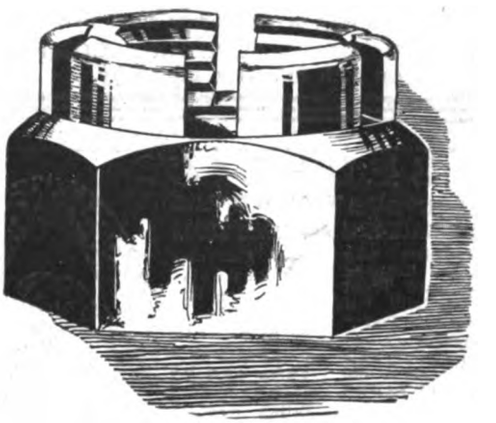
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Special Parts milled in quantities at reasonable prices. Send us your samples.

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Exchange Your Old Magneto for a New Remy

IT will cost you practically no more than what you will be forced to pay out for constant repairs on your present ignition system. A new Remy will give your car new life. Here is our exchange proposition:

	List Price	Allowance	Net to You
2-Cylinder Remy Magneto with Coil, complete.....	$46 00	$ 9 20	$36 80
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Allowance made for any make of Magneto.

Remy Electric Company
Anderson, Indiana

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Stop Tire Troubles

INVESTIGATE AND LEARN WHY SO MANY THOUSANDS OF MOTORISTS ARE DISCARDING INNER SHOES, RELINERS, FILLERS, AND OTHER MAKESHIFTS FOR INTERLOCK INNER TIRES—AND WHY INTERLOCKS ARE HANDLED AND RECOMMENDED BY THE BEST SUPPLY DEALERS AND TIRE HOUSES ALL OVER THE COUNTRY.

One weak point of the automobile to-day is that you can't depend on its tires. INTERLOCKS revolutionize this condition by making your tires so strong that blowouts become practically impossible. INTERLOCKS save half your tire expense—save repair bills—double your mileage—prevent punctures and completely free you from all fear of tire trouble.

What INTERLOCKS Are.—The INTERLOCK is a complete inner tire (not an inner shoe) which is placed between the outer casing and the inner tube to strengthen the outer casing and protect the tube. It is the only reinforcement which is locked by air pressure to the rim and which becomes an integral part of the tires, and, therefore, cannot heat or chafe. Even if the tire is broken the INTERLOCK will hold.

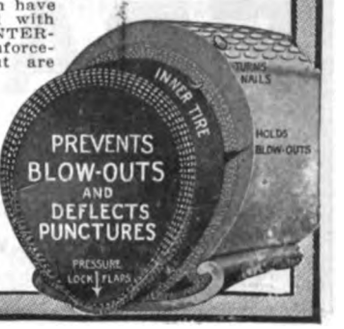
INTERLOCKS Insure Safety.—You know that the sudden blowing out of a tire may easily ditch any car when going at fair speed—the safety of INTERLOCKS should appeal to you.

Reduce Your Tire Expense.—You can have the tires on your new car equipped with INTERLOCKS if you specify them. INTERLOCKS are the only perfect tire reinforcement. They cost a little more but are cheapest in the long run.

For your present car—ask any dealer or supply house, or write to us for the name of your nearest supply source. INTERLOCKS will make any fairly sound tire more than carry you through the season. They are easily placed and are made in all sizes.

We Want Dealers Everywhere.—Write for Special 30 Day Offer, Booklets, Prices, Records of Road Tests and Testimonials of users.

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STAGGARD TREAD TIRES
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Motorists who use Republic Staggard Tread Tires will tell you that they—

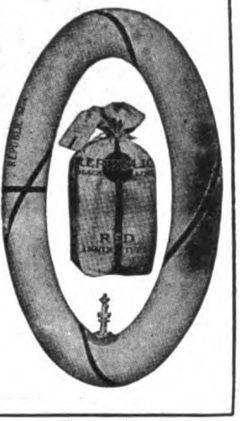
Prevent skidding, make quick starts and short stops easy.

Give double mileage because of the full-thickness tread under the studs.

Most Widely Imitated of All

We guarantee the Republic Black-Line Red Inner Tube to be as nearly perfect as a tube can be made—and is a fitting companion for the splendid Republic Staggard Tread.

The Best Tube Made



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Convenient—Safe—Dependable

Every car owner in your vicinity, Mr. Dealer, will be interested—it's up to you to show them—and sell them. Write for booklet and dealer discounts.

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Enjoy the delights of the cool breezes from Lake Erie and resume your journey in the morning after a refreshing night's rest. Special attention given by this Company to the handling of automobiles. Rates quoted on application (state wheel base); Tanks of Automobiles must be emptied of gasoline before being shipped; three gallons of gasoline supplied free on arrival at destination.

Roads in this section of the country are in first class condition; new road now under construction between Detroit and Toledo. Tourists speak highly of the route between Buffalo and New York.

On your trip this summer bear in mind "The Waterway is The Only Way."

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TIRE CUTS ruin casings. They admit moisture to the carcass, cause the fabric to rot and weaken, grow larger—end in blowouts.

You can repair **CASINGS** and **INNER TUBES** anywhere in 15 minutes, better than a Repair Shop can do—and for *one cent*.

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Patented

A practical vulcanizing outfit complete, with enough repair gum to make 40 patches. It weighs 3 pounds and can be carried in the tool box. **Simplest and most satisfactory device for eliminating tire troubles that has ever been devised.**

Absolutely automatic. Place the patch—attach the Vulcanizer—put in the gasoline—light it. No further attention required. In 15 minutes the job is done.

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PRESSED STEEL

FRAMES

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Standard Universal Rims



fit any style or make of tires. The side rings are reversible, they curve outward on one side to fit a straight side tire, inward on the other to accommodate a clincher. Two turns of a nut unlocks the rim for demounting, two more turns locks the rim in place. Write for catalog 607, which explains fully.

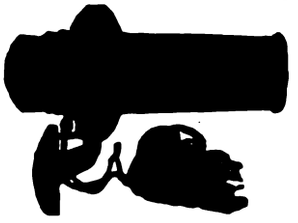


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Torpedo Type
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Best on Earth — Kantsamore
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Automobile Wheels
For Pleasure Cars and Trucks
Repairing and truing old wheels a specialty. Experimental wheels a specialty. We furnish and apply any style demountable or detachable rim or tire.

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SPARK PLUGS
Used as standard equipment by eighty-eight manufacturers.
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You require the best bolts made—bolts manufactured from suitable analysis open hearth or nickel steel —bolts tough and strong and properly hardened for this vital duty.



Your inquiry for bolts ground to size, ready to slip into place, will bring surprisingly low prices —quality of work considered.

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Regular Type $1

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Ninety per cent. of all engine troubles can be traced to the ignition system—a better understanding of this system helps.
Our free book, "Ignition and Spark Plug Talk," explains everything. Mailed you on request.
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Largest Spark Plug Manufacturers in the World

THE LONG HORN
The One Mechanical, Never Failing Warning Device
Costs Little to Buy—Costs Nothing to Operate
No Battery—No Wire—No Bulb—No Motor to break down or fail to work.
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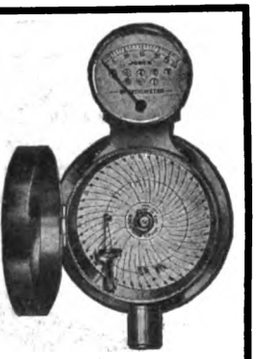
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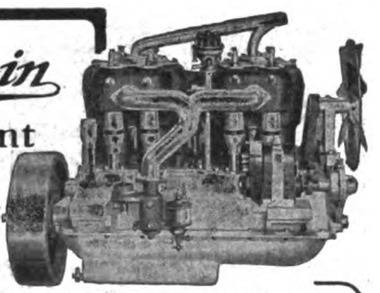
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Real masterpieces of engineering skill. Note their special features — examine their perfect construction.
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ALL 4 CYCLE — IN 5 TYPES — 3 3-4 in. bore, 5 in. stroke, 4 cyl. 4 1-4 in. bore, 5 in. stroke, 4 cyl.
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Write us and we will tell you where a Wisconsin Motor may be seen.
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Patent "Luxury" Folding Seats

Do you wish to make your car more comfortable by installing a pair of auxiliary seats? If so, have the best. Our seats are made in five styles. Send for catalogue.

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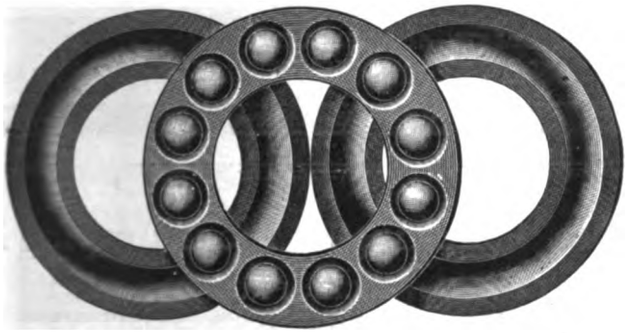
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THE ULTIMATE CAR
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SPECIAL METAL STAMPINGS

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40-Horsepower Touring Car or Roadster, absolutely silent in operation. Cylinders 4¼ x 5¼-in. — 116-in. wheelbase—34 x 4-in. tires—demountable rims—nickel mountings—massive, straight line body—big, roomy seats—proved self-starter—everything. Price $1500. Guaranteed for life by the Michigan Buggy Company. 40-horsepower Roadster on the same chassis. Two smaller models. Catalog on request. (83)

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New Departure Guaranteed Ball Bearings

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THE COLONIAL

Big, roomy, 5-passenger, open or enclosed car of distinctive design and luxurious appointments. Equipped with self-starting device. It's the car with a thousand little conveniences—

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DAYTON TRUCKS are made in 2, 3 and 5 ton models. They hold a world's record for durability, reliability and efficiency. Write for catalog.

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We want you to write for the Solar Catalog before you decide on your motor lamps, for this is the most complete line of lamps on the market. Solar Lamps have been preferred by most motorists for the past fourteen years because of their brilliancy, their style, their strength and their several exclusive advantages—their special short focus lead glass lens mirror reflectors—the patented double ray light projection (in the Solarclipse), giving two distinct fields of light, for city and country use—the new black finish, the only such finish that's proof against heat and moisture—and other features that other lamps lack.

To fail to see Solars before you buy is to fail to include in your consideration the very finest lamps in existence. Solars are made for oil, electricity, gas and in combination, for pleasure cars, motor trucks, carriages, motor boats and airships. Write for catalog now—while you think of it. (136)

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Drop Hammer Forgings

cost very little more than castings. They are vastly superior and less expensive in the end.

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400 MILES TO THE GALLON OF OIL

This is proof of the superiority of the Franklin re-circulating oiling system:—

And of the high efficiency of Franklin direct cooling.

It is double the average mileage per gallon of oil obtained by owners of water-cooled cars.

Franklin re-circulating oiling system delivers a steady stream of oil to each of the main motor bearings through separate leads. It is the only oiling system that feeds oil positively and directly to each of the main bearings.

The amount of oil pumped over the bearings is proportional to the needs of the motor. The faster the motor runs the more oil supplied. This means perfect lubrication under every condition of running.

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Hook up with COLE

COLE

Series Eight comes in Three Chassis:

Cole Sixty six cylinder Touring Car, five passenger convertible to seven passenger, 132-inch wheel base, Delco electric lighting, starting and ignition. $2485

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Write for Illustrated Circular.

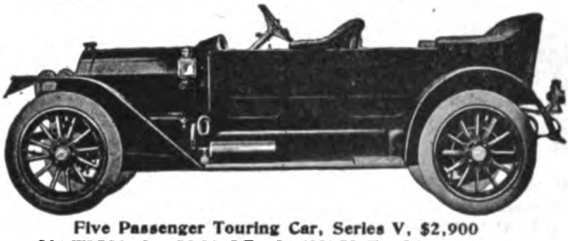
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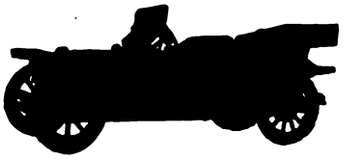
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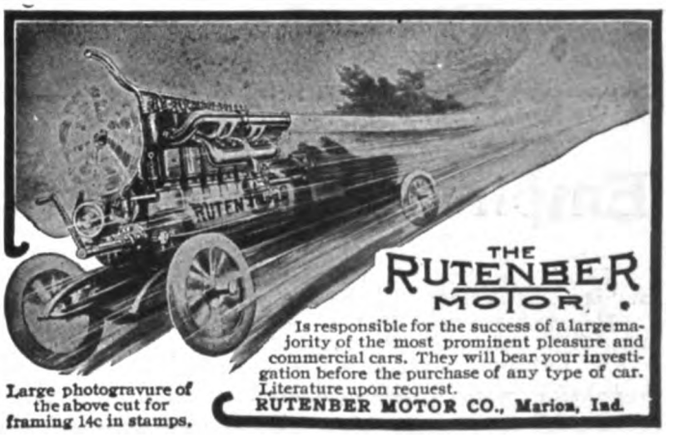


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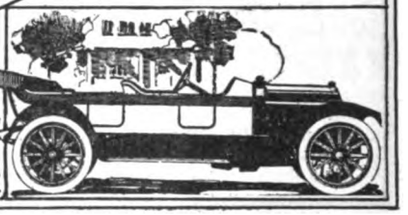


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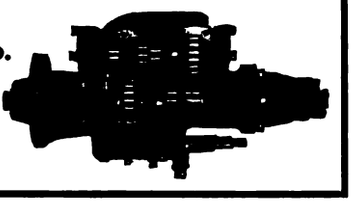
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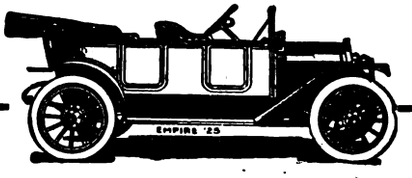
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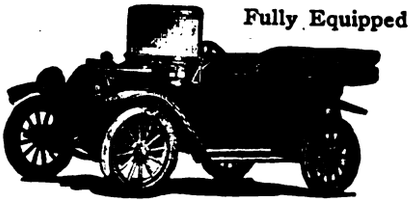
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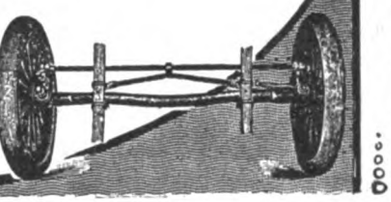
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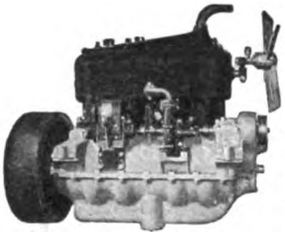
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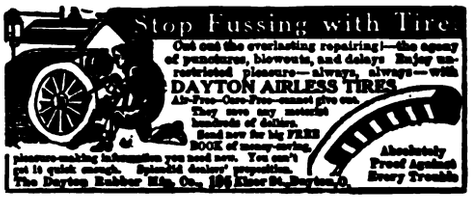
Continental Model "C"

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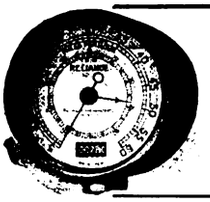


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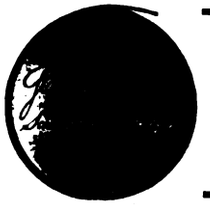
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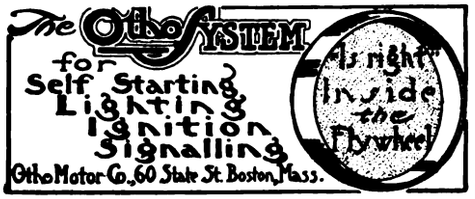
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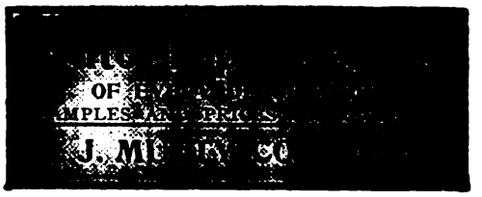
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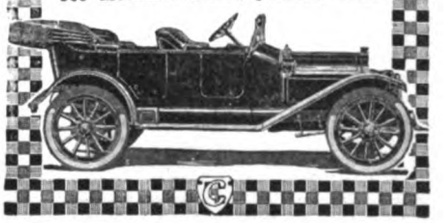
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A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

FOR RENT—Factory Building, Syracuse, N. Y.; 18,000 square feet floor space, on best street in the city; engine, boiler and shafting complete. Two elevators, city water, gas and electric service, and equipped with sprinklers. Use of railroad siding. Electric cars pass office door. Apply GEORGE N. COMLY, 1816 West Genesee St., Syracuse, N. Y.

SCORED CYLINDERS repaired, $12. No enlargement of bore—no need for new pistons and rings. Send piston with cylinder. Absolutely reliable method. References, testimonials, and full details on request. WATERBURY WELDING CO., Waterbury, Conn.

YOUNG MAN with executive ability who has had five years experience as Garage Manager and Salesman, wants to make change, from present position with firm handling 200 cars per year, and connect with reliable firm. No boozer or joy rider. Not afraid of work. Location no object. BOX 219, care Motor World.

Always read Dunk's advertisement.
"It Pays to Pay Dunk."
$35.00—Sterling Wind Shield—$7.40.
AUTOPARTS MFG. CO.,
Detroit, Mich.
No Branches. Beware.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.
Bakes to either a high gloss finish, egg-shell gloss or dull finish, on lamps, radiators and fenders. Will not crack, chip or peel.
The Columbus Varnish Co., Columbus, O.

SILVER PLATE the brass on your automobile and eliminate polishing; easily applied; costs less than polish, formula 25 cents, silver preferred. BOX 21, Sabina, O.

TWO AND FOUR cylinder motors, $50 to $175. Chain drive chassis, $35. Transmissions, $10 and up. W. D. PECK, 18 Sawyer Ave., East Orange, N. J.

KENNEY NUT LOCK. Won't jar off. Holds tight wherever vibration exists. Patent and all rights for sale. DR. W. F. KENNEY, 122 Hope St., Providence, R. I.

AUTOMOBILE AT SACRIFICE—1 model 17, 1911, 5-passenger Buick, $725; A-1 condition. F. MARION SHEEN, 521 Clouet St., New Orleans, La.

PEERLESS LINING DYE
makes a new lining out of a dirty, faded and stained inside. Will not fade or wash off. Leaves the cloth soft and pliable.
The Columbus Varnish Co., Columbus, O.

FOR SALE—1906 Pierce-Arrow seven passenger touring car, completely overhauled this spring, in first-class running condition, could be used as taxicab or turned into first-class delivery truck for flower peddlers and similar purposes. Cheap to prompt cash buyer. J. R. J., 1004 Sunset Ave., Utica, N. Y.

STEAM Vulcanizing Plant — Complete, worth $200; only $25. 3528 N. 27th St., Omaha, Neb.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

"A New One."
A $2,500 Auto for $150.00.
Build your own car. We will sell you complete set of Axles, Frame, Springs, Wheels, Steering Gear and Radiator, $150.00. With plan for putting together.
AUTOPARTS MFG. CO.,
Detroit, Mich.
No Branches. Beware.

PEERLESS EXTRA FINE BLACK JAPAN.
Enamels lamps, radiators and fenders to a fine gloss finish. Will not crack, chip or peel. Not affected by heat, retains its lustre.
The Columbus Varnish Co., Columbus, O.

WANTED—First class electric automobile machinist and repairmen in Denver, Colo. P. O. BOX 1023.

AUTOMOBILISTS — Buy guaranteed tools and inner tube puncture-repairing material. Do yonr own repairing easily and quickly. Agent's price, $5.00; ours, $3.50, cash with order. Bank references. W. H. MIZELLE, Robersonville, N. C.

ONE 5 passenger Auto body, with top, $35.00. Rear axle, $20.00. H. KASKEL, Spencerville, O.

ONE-QUARTER PRICE—Fine 5-pass. touring car just overhauled; full equipment; appearance and running A-1; bargain extraordinary, as move east this week. BRATENAHL BLDG., Rm. 5, Cleveland, Ohio.

Another Offer by Dunk—
$15.00 New Auto Trunk—$6.50.
AUTOPARTS MFG. CO.,
Detroit, Mich.
No Branches. Beware.

WE have a very large wholesale clientele and are open to take up European agency for a new motor accessory. Write before sending sample. K., B & CO., LTD., 5 Rue Auber, Paris, France.

ON ACCOUNT of death of owner, will sacrifice 1911 Olds Autocrat, equipped, in excellent condition. Tires good. No triflers. MRS. C. G. ROCKEFELLER, Sunbury, Pa.

ATTENTION—Have a few manufacturers' samples, gentlemen's black broadcloth fur lined overcoats, lined throughout with Australian mink, large genuine Persian lamb collars, sizes 36 to 48. Value $75, will sacrifice for $35 each. Also several ladies' handsome long fur coats, satin lined, worth $90, while they last, $35; and few large size fur robes, plush lined, $15 each. All guaranteed new. Examine before buying. Send express charges, will send on approval. Write or call. E. ROBERTS, Room 8, 160 West 119th St., New York.

WE WANT the most capable salesman in the automobile industry—a man who is holding a good position now. We want THE man who is willing to work hard and faithfully, with unquestionably the most important accessory, looking to comfort and refinement in motor cars, since the beginning of the industry. We want the man who is able to do big things and make big money. All communications, of course, strictly confidential. If you are looking for a chance to reap some of the profits (not merely a salary job) of a concern that is destined to be one of the biggest accessory successes on the market, communicate with us immediately.
E. R., care Motor World.

SALESMEN, one who is now visiting automobile trade or owners. Good money made on a very attractive proposition. STURDY MFG. CO., 2637 Michigan Ave., Chicago, Ill.

Dunk Way Pays.

Ford Model T Radiators	$18.00
Ford Model R, N or S Radiators	$23.00
Hupp Radiator	$25.00
Buick 10 Radiators	$26.50
Buick 16 and 17 Radiators	$32.50
Buick 19 Radiators	$27.50

We make them for other cars too.
AUTOPARTS MFG. CO.,
Detroit, Mich.
No Branches. Beware.

FORD SHOCK ABSORBERS
will make your car ride like a Pullman. Easily attached, fit perfectly. Special introductory prices. Agents wanted. THOMAS AUXILIARY SPRING CO., Canisteo, N. Y.

SCHEBLER CARBURETOR.
J. C. NICHOLS.
DIRECT FACTORY DISTRIBUTORS.
1673 B'way at 52d St., New York City.
Tel, 6161 Col.
Our new model L Carburetor with three speed adjustments, at half price by returning your old model Carburetor.

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Glide

In 1917—Five Years Hence

the 1913 GLIDE will still be a **modern,** serviceable car. Why? Because the present GLIDE leaves but very little that can possibly be improved upon.

It is far ahead of many 1913 cars—and **no** car is **leading** the GLIDE in high-class materials, construction and all of the newest equipment.

The 1913 GLIDE is **electric lighted**—simply turn a button and all lamps are on!

The GLIDE Motor-Driven Tire Pump eliminates drudgery. Also **saves your tires** by keeping them fully inflated at all times to any desired pressure.

Electric **Bull's Eye** Side Lamps are **sunk in dash,** eliminating rattling, minimizing breakage and adding to the classy appearance.

The GLIDE Self-Starter is **sure** of a spark—**investigate** and learn **why** the GLIDE starter is **efficient.**

Simple center control, left side drive, demountable rims, irreversible steering gear—and in fact **all** the newest features of known worth—establish the "class" of the 1913 GLIDE.

Make a memo—right now—to write us for detailed description of the entire GLIDE line.

"36-42" Features

Automatic Dynamo Lighting System
Motor-Driven Tire Pump
Unit Power Plant
Long Stroke Motor with *enclosed valves*
Center control
Left Side Drive
Bull's Eye* Electric Side Lamps *Sunk in Dash
Electric Headlights and Tail Lamp
An *Efficient* Self-Starter
Floating Rear Axle with Pressed Steel Housing
Demountable Rims (Baker Bolted-on)
118-inch Wheel Base

You can't get GLIDE quality, equipment and service **in any other car** at the GLIDE price. Make us prove it! You can pay **more** and get **less.**

Our price includes complete equipment, as follows: Dynamo, Mechanical Tire Pump, Self-Starter, Mohair Top, Top Boot, Glass Front, Electric Headlights, Side Lamps and Tail Lamp, Demountable Rims and One Spare Rim, Model B Stewart Speedometer with Grade Indicator, Spare Tire Carrier. Full quota of tools and jack, all nickel trimmings.

5-Passenger "36-42"

$1690
Fully Equipped



Other Styles: 2-Passenger "36-42," 2, 4, 5 and 7-Passenger "45-50," Delivery Cars, Police Patrol and Ambulance

Dealers

The extraordinary quality and equipment of the GLIDE is apparent to the most experienced. It not only sells itself, but every car sells others.

Write for our attractive Dealer's proposition today. Get the GLIDE agency now, while there is still open territory.

THE BARTHOLOMEW COMPANY
220 Glide Street **Peoria, Illinois**

Care and Repair of Motorcycles



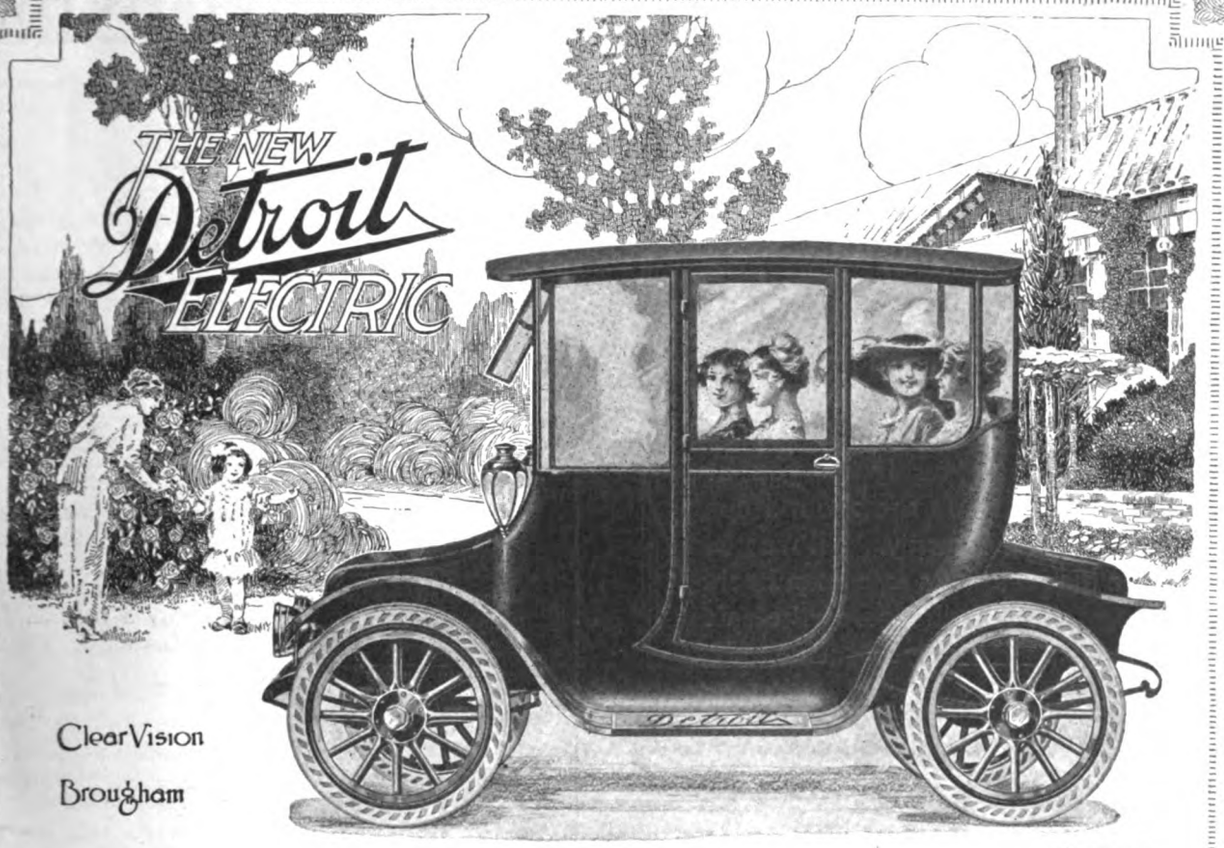
A TROUBLE SAVER
FOR THE
MOTORCYCLIST



Price 25 Cents

Bicycling World Company
1600 Broadway **NEW YORK**

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Model 42

$3,000 F. O. B. Detroit

Arrived!

IT'S here—the electric automobile for which you have been waiting—***The Detroit Electric Clear Vision Brougham for 1913.*** It is driven from the front seat, all seats facing forward. You not only have a clear vision of the road ahead, but in addition you have a clear view at either side or the rear as there are no corner panels to obstruct the view. Glass has even replaced these rear corners, formerly built of wood.

After years of effort, we have solved the problem of a standard body design that is destined to be a classic of the body-builder's art—always in style.

A new and clever seating arrangement permits all of the occupants to face forward and still enjoy the privacy, sociability and dignity characteristic of electric automobiles. The driver's seat is not in an isolated position—way up in front. It is centrally located, thus ensuring an appearance of easy grace and balance, even when one person is using the car.

Larger wheels will be used in 1913—34"x4" Pneumatic or 36"x4" Cushion Tires being optional.

The battery capacity has been increased. This applies to both the Edison and Detroit Electric Guaranteed Lead Batteries. *All* battery cells are immediately accessible.

Our motors, controllers, bodies—even our Guaranteed Lead Batteries—are all made in our own factory. ***We do not assemble—we build.***

To Automobile Dealers Everywhere

HERETOFORE our business has been mostly centered in the large cities. We believe, however, there is a real business opportunity for the right dealer in every town of 10,000 or over, in which the Detroit Electric is not now represented.

Any city or town in which electricity can be bought, affords a market for electric automobiles. Isn't your line incomplete without electrics?

Think how many times you have had inquiries for them. Doesn't this indicate a growing interest in the electrically driven automobile.

In its present highly developed state, the Detroit Electric, if properly handled by you, means increased business with a comparatively small added investment.

It will pay you to investigate. We will be glad to give you special information and practical assistance. We desire only permanent connections that will be mutually satisfactory.

By signing the coupon below, you will put yourself under no obligation, but may open a way towards a greatly increased business.

Remember that the Detroit line is absolutely complete. It includes eight models in pleasure cars and a full line of electric trucks. All are made in our own factories and guaranteed by our company, the largest organization in the world devoted entirely to the manufacture and sale of electrically propelled vehicles.

Send the coupon today.

Anderson Electric Car Co.
423 Clay Ave., Detroit, Mich.

Please send me full particulars about your agency proposition with facts about the market in this territory.

Name .....

Address .....

Present line of cars handled.....

NEW YORK: 80th and Broadway
BOSTON
BROOKLYN
BUFFALO

ANDERSON ELECTRIC CAR CO.
423 Clay Ave., Detroit, Mich.

CHICAGO: 2416 Michigan Ave.
CLEVELAND
KANSAS CITY
MINNEAPOLIS

LARGEST MANUFACTURERS OF ELECTRIC AUTOMOBILES IN THE WORLD

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We Want the Biggest Parts Salesman Obtainable NOW

CAN you sell axles and wire wheels? If you can, I can show you how to earn "way-up-in-five-figures." Wire wheels are assured as general equipment, just as surely as you are breathing. We are on the ground floor—pioneers in this country. All we need now is the biggest parts salesman in this country to take full charge of the sales of McCue wire wheels and McCue axles.

The man we close with can make all the money he wants—he himself is his only limitation. But he must be a man who can get audiences with the real heads of industry—he must be a big man. He has a splendid position now. Here is a better one. Or perhaps he has the capabilities but a limited position. If he has the capabilities we have the position which is unlimited.

Of course, all communications will be held strictly confidential.

Don't write if you're not the big man we want. But if you're the man who can really sell in a big way we can provide the means for a fortune for you. Don't wait, show your keenness by writing at once.

C. T. McCUE, Buffalo, N. Y.

Are You Worth $25,000 a Year?

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Mayo Radiators

are standard on a number of well known makes of cars—in all instances, cars in which quality predominates.

¶ Mayo Radiators offer a maximum of radiating service and are immune to leakage except in case of accident.

¶ We have been building these radiators for years and we offer them as models of correct design and construction.

¶ Every radiator is guaranteed to live up to the requirements set for it and we stand back of this guarantee.

¶ Let us give you some facts concerning the system and its application.

[redacted]

Mayo Radiator Co.

NEW HAVEN, CONNECTICUT

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Overland 1913

$985

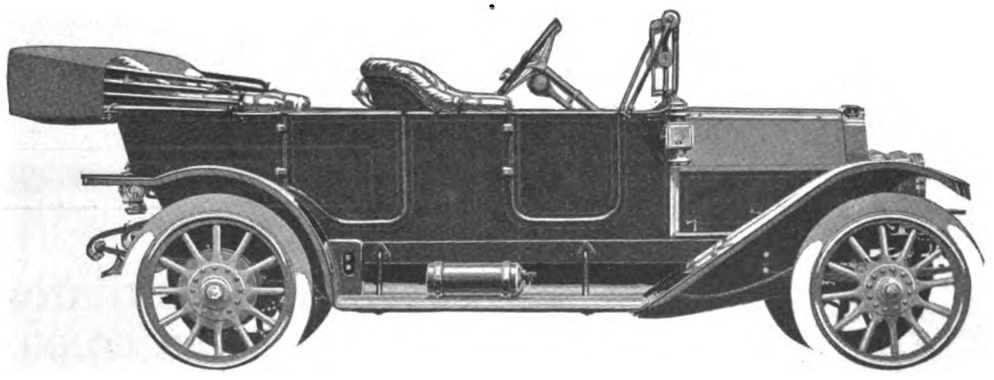
Completely Equipped

Real Value for Your Money

Self Starter
30 Horsepower
5-Passenger Touring Car
110-inch Wheel Base
Timken Bearings
Center Control
Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision Wind Shield
Prestolite Tank

¶ The Overland Model 69T offers real value for your money. And when we say "value" we mean just that—a greater amount of real worth and a higher percentage of efficiency than were ever before offered for less than $1000. Look the car over. Compare it, critically, with others costing up to $1200. Then you will be convinced of the truth of this statement. You will realize more fully, too, what a factory capable of large output—40,000 cars this year—means, in the way of economy, to the automobile user. Our 1913 catalogue will tell you more fully of this car. Please address Dept. 50.

The Willys-Overland Company, Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, October 3, 1912 No. 2

USED CAR PROBLEM IS UPPERMOST AT SALES MANAGERS' CONVENTION

Not Listed as a Topic But Too Serious To Be Avoided—Keen Discussion of Many Other Matters of Vital Interest to Manufacturers and Dealers Marks the Two Days' Proceedings.

Used cars cropped up repeatedly during the sales managers' convention, held under the auspices of the Automobile Board of Trade in its New York offices on Monday and Tuesday last. The used car did not constitute a fixed topic for discussion but its baneful influence is such that talk of it simply could not be avoided. Its effect on almost every part of the business was freely admitted.

Of course, no solution was agreed on. Apparently the idea which met with most accord was contained in a suggestion that no cars be taken in trade by dealers, who, instead, should organize a special used car department and sell their customers' cars for the account of the respective owners. There were those who urged a co-operative "clearing house," or selling agency, for used cars, in which the dealers of each respective city should join hands, but one of the sales managers present brought out that such a scheme had been tried in Milwaukee and that it had failed. The dealers there still are paying rent for a store which was leased, but each is going his separate way and disposing of used cars according to his own lights.

The most radical suggestion was offered by J. Elmer Pratt, sales manager of the Pierce-Arrow Motor Car Co., who did not mince words in maintaining that the true solution rests in cutting down the volume of production. Much of the trouble, he said, is caused by the action of manufacturers forcing or urging dealers to stock up and take their full allotments, which policy, although it may serve to clear factories, reacts on them by leaving unsold cars in the hands of many dealers and thereby stagnating or depreciating the market in many directions, and compelling the dealers to cut prices and to engage in trading despite their own best inclination. Pratt said that the number of used cars at present in the hands of the trade is enormous, and that nothing will serve to relieve the glut but a general paring down of outputs. His hearers gasped, but none of them undertook to dispute or share his views.

(Continued on page 31.)

General Motors Abandons Two-Cycle Cars.

The manufacture of the Marquette and Elmore cars has been discontinued by the General Motors Co., which controls both plants. The Marquette factory probably will be abandoned, but the fate of the Elmore plant, in Clyde, Ohio, is yet undecided. It may be used for purposes of developing a car of another type but, at any rate, the Elmore, which was the only remaining conspicuous exponent of the two-cycle engine, as least so far as pleasure cars are concerned, will be known no more. Any necessary work pertaining to either Marquettes or Elmores will be performed in the Olds factory in Lansing, Mich.

OOSTDYKE ORGANIZES COMPANY TO ELIMINATE GEAR-SHIFT PROBLEM

Detroiter To Produce Electrical Device of a Revolutionary Character—Gears Controlled by Push Buttons on Steering Column—Long Test Indicates Practicability—Plans for Manufacture.

Hinted at before, several times attempted, but never quite realized, the "leverless car," made possible by electric control of gear shifting operations, at length has become a reality, and before many months have elapsed apparatus of the kind in all probability will be placed on the market, for already a $100,000 company, styled Oostdyke Gear Shifter Co., has been formed in Detroit for the purpose of manufacturing and marketing the device which is nothing short of revolutionary in character. Giving evidence of earnestness of purpose and in large measure of the merit of the apparatus, the president and general manager is none other than Charles A. Oostdyke, who, until he resigned to take up the active manufacture of the device, which is his own invention, was director of purchases of the General Motors Co. He already has arranged for its manufacture, and states that in three months his company will be in position to turn out from 100,000 to 200,000 of the gear shifts each year.

That the apparatus is not only practical but is surprisingly devoid of complication, was demonstrated to a Motor World man in the course of an afternoon's ride in Oosterdyke's own car, a Bergdoll, in which the usual side lever gear shifting mechanism is replaced by the new electric apparatus. Not more than five minutes were required to familiarize the Motor World man with the

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mechanism, which is so easy to operate as to cause amazement.

The visible part of the device is simple in the extreme, consisting of a small keyboard attached to the steering column and containing five keys resembling typewriter keys, each key bearing an embossed letter or number. Reading from left to right the keys are marked R, N, 1, 2 and 3, respectively, for reverse, neutral, first, second and third speeds. The usual side lever is disconnected and dispensed with. When it is desired to change gears the proper button is pressed and the clutch thrown out and let in again. This is the whole gear-changing operation. The action of the device is such that the gears are always fully meshed before the clutch is let in after making a change, avoiding disagreeable chattering and banging, and of course eliminating a certain amount of wear and tear on the gear teeth.

The mechanism which acts upon the gears, and is dependent for its operation upon a set of electro magnets, is contained in a pressed steel casing, 10 inches long, 4¾ inches wide and 3 inches deep, located under the floor boards of the car. The magnets are of highly specialized design and are said to be positive in action; nevertheless, all the current required is furnished by a set of four dry cells. The current volume amounts only to 2.1 amperes.

One of the most interesting features of this extremely fascinating control system is that it can be applied to any sliding gear transmission, either progressive or selective, and is connected through the regular gear shifting rods. The inventor's car, a 30-horsepower Bergdoll, has been running for several months with the electrical control system in operation, and the hand lever disconnected. The operation of the car is reduced to steering, braking and an occasional touch of the finger on one of the keys and the foot on the clutch pedal.

The expense of the new gear shifter is said to be extremely reasonable. In some cars, it is said, it can be installed at a cost less than that of the regular hand controlling system, and in no case is the cost likely to exceed that of the hand lever and its appurtenances. Existing cars can have their control systems changed over at a moderate cost.

Creditors Act Against Penn Auto Supply.

Creditors of the Penn Auto Supply Co., of 236 North Broad street, Philadelphia, Pa., have filed a petition asking that it be adjudicated a bankrupt; the creditors charge that a payment of $311.29 to the B. F. Goodrich Co. was preferential. The claims aggregate $568.30 and there are three creditors.

INTERNAL TURMOIL LEADS TO RECEIVER FOR OHIO

Differences Between Stockholders and Officers Cause Creditor to Take Action—Reported Assets Exceed Liabilities.

Believing that the interests of the creditors were endangered by dissentions within the Ohio Motor Car Co., of Cincinnati, the Diamond Rubber Co., of Akron, on Thursday last, 26th ult., petitioned the Cincinnati company into the hands of a receiver. Edward G. Schultz, general manager of the Le Blond Machine Tool Co., was named receiver and his bond fixed at $25,000. The claim of the Diamond company is based on a note for $6,000, which was not met when it fell due on September 15th last.

The rubber company alleges in its petition that there are irreconcilable differences existing between C. F. Pratt and A. E. Schafer, respectively president and vice-president of the company, who are in active control of the business, and the rest of the stockholders, and unless harmony is restored the assets of the company will be wasted and reduced in value to the loss of its creditors.

The petition also declared that because of delay in receiving certain materials the company has been unable to fill many orders that in consequence have been canceled, with the result that the company is left with a stock of partly finished machines on hand, worth more than $200,000, which will be of little value unless they can be manufactured to completion.

According to the statement of the officers of the company, its assets amount to approximately $404,000 and its liabilities to $177,000.

The Ohio Motor Car Co., which manufactures the car of that name, is of comparatively recent origin and is the outgrowth of an extensive carriage business in which a number of its principals previously engaged.

Chalmers Carves Another "Melon."

Having foregone distribution of dividends for a period of 18 months, in order to permit of factory development, the Chalmers Motor Co., of Detroit, on Tuesday last not only resumed payment of its regular quarterly dividend of 2½ per cent. but also increased its capital stock from $3,000,000 to $5,000,000, of which increase $1,000,000 was paid to stockholders in the form of stock dividends. The other $1,000,000 was placed in the treasury for future use. The strength of the Chalmers securities was reflected on the Detroit stock exchange on Saturday last, when it was quoted at 156.

The stock distribution of Tuesday constitutes the second luscious "melon" which the Chalmers company has cut. In August, 1910, when its capitalization was increased from $300,000 to $3,000,000 and the par value of shares raised from $10 to $100, a stock dividend of 900 per cent. was declared in addition to a cash dividend of 30 per cent. on the smaller capitalization.

Polack Gets Tire Plant in Bridgeport.

On or about October 15th, the Polack Tyre & Rubber Co., of New York, which in May last succeeded the Maine corporation of the same name, will begin the manufacture of its truck tires in this country, which heretofore have been produced by the Pennsylvania Tire & Rubber Co., of Jeannette, Pa. The Polack company has closed a deal for a plant in Bridgeport, Conn., in which the necessary machinery now is being installed. The building which will be utilized formerly was occupied by the Bridgeport Copper Co. and is located on Howard avenue.

The Polack company is an outgrowth of the German industry of the same name, its president being Max Polack, who is manager of the parent concern in Waltershausen, Germany. The American interests, however, are in charge of Herman W. Polack, vice-president of the New York corporation, who conducted the negotiations with the Bridgeport Board of Trade.

Freeman to Direct Sale of Clarks.

H. M. Freeman, treasurer and manager of the Finch-Freeman Auto Co., of Indianapolis, has been appointed sales manager of the Clark Motor Car Co., or Shelbyville, Ind., which recently emerged triumphant from its financial entanglement, and which for 1913 will market a line comprising five models. While Freeman will devote a large part of his attention to his new duties, he will not wholly divorce himself from the Finch-Freeman Co., which handles the Regal and Nyberg cars in Indianapolis.

Overland Effort Now Reaches Over Sea.

Calls from abroad having justified it, and to supplement previous efforts, H. B. Harper, assistant sales manager of the Willys-Overland Co., has been despatched to Europe to broaden the export market for Overland cars. He has authority to allot territory, and before returning will visit England, France, Germany, Spain, Italy, Austria, Holland and Russia.

The White Co. is erecting an addition, 160 x 240 feet, to its plant in Cleveland. It will be completed about December 1st.

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TRUCKS TO BE MARKETED ON "EASY PAYMENT" PLAN

Sales Company Formed to Handle Selden Production on Much-Mooted Basis—Will Sell Direct to Users, Too.

Sales of trucks from the factory direct to the user are not wholly new, but selling them on the installment plan, while not novel in conception, is unusual and generally is considered an undesirable practice. But despite beliefs to that effect which may exist ,the Selden truck, which is just about ready for the market, will be sold on that plan.

The sale of the truck will be conducted not by the Selden Motor Vehicle Co. itself but by the Selden Truck Sales Co., of Rochester, N. Y., which has been formed for the purpose and which, capitalized at $150,000, has been incorporated under the laws of New York. It will handle the entire output of Selden trucks. The incorporators of the sales company are George C. Gordon, William C. Barry, Jr., R. H. Salmons, Henry G. Strong and Charles H. Stearns, all of Rochester, N. Y., the first three named being officers of the Selden Motor Vehicle Co.

The exact terms of the easy payment plan which will be brought to bear have not been made public, but it is stated that in respect not only to time payments but to service which will be rendered, it will "present something entirely new and novel and will enable many other concerns to operate trucks who could not conveniently do so if obliged to buy on a cash basis."

The manufacture and sale of the Selden pleasure car will be continued under the same management as heretofore. It will remain a medium-priced model and for 1913 will include a number of improvements and refinements, and will be sold "either direct or through dealers."

Ford Reduces Prices 15 Per Cent.

Almost without warning, and while comparatively few were expecting action of the sort, the Ford Motor Co., of Detroit, on Sunday last announced a horizontal reduction of approximately 15 per cent. on all types of Ford cars, the new prices becoming effective October 1st. The torpedo roadster was reduced from $590 to $525, touring car from $690 to $600, town car from $900 to $800, and the light delivery wagon from $700 to $625.

The Ford company had guarded well its secret, and as only last month it stated that it had no "car announcement" to make, those who did not properly digest the careful wording of the statement took it to mean that Ford prices would remain unchanged. The fact that the Ford company is planning to double its output and produce at least 150,000 cars next year is given as the chief reason for the reduction, but whether or no it was so designed, there is no doubt that it will make things uncommonly interesting for some of those engaged in the manufacture of popular-priced cars.

Reclaimer to Make Tires in Lowell.

According to present plans, the Patterson Rubber Co., of Lowell, Mass., which recently was formed with $500,000 capital stock, will break ground next week for the erection of a plant in that city which, while it will produce other rubber goods, will chiefly have to do with automobile tires. The plant, is is stated, will comprise five buildings. John S. Patterson, of Providence, R. I., is president of the company, his son, James M., is vice-president, and Francis H. Appleton, of Brookline, Mass., and his son, Francis H., Jr., are, respectively, treasurer and clerk. The elder Appleton has been identified with the rubber industry for a considerable period, and at present operates a large reclaiming plant in Franklin, Mass., where his son is located. In addition to the men named, George F. Singleton, of Franklin, will be a director of the new company.

Swinehart Chooses a New President.

In the interests of harmony, and to facilitate the carrying out of plans which are in view, W. W. Wuchter, president and general manager of the Swinehart Tire & Rubber Co., of Akron, O., retired from those offices last week. He will, however, remain in the service of the company. T. F. Walsh was elected his successor. C. O. Baughman was retained as secretary and R. A. May was re-elected treasurer. Four new directors, however, entered the company. They are T. E. Bolton, of Cleveland, and A. A. Polsky, A. C. Hoff and Oliver L. Toomey, of Canal Dover, O. The directors who were re-elected are W. E. McWheldon, E. L. Mather, T. F. Walsh, R. A. May and Joseph Dangel.

New York Creditor Buys King Plant.

By order of the court, the plant of the bankrupt King Motor Car Co., of Detroit, has been sold to George N. Clark, an attorney who represents Artemus Ward, of New York, who was one of the company's heaviest creditors. The purchase price was $40,000. The plant will continue in operation and the company probably will be reorganized. In addition to disposing of the plant, the referee in bankruptcy has declared a creditors' dividend of 5 per cent.

KNOX MAKES ASSIGNMENT; MAY AVOID BANKRUPTCY

Burden Proves Too Great To Be Longer Carried by Mayo Estate—Contributing Causes of Failure —Liabilities, $1,300,000.

After having been carried for more than a year by A. N. Mayo, its treasurer, and having been sustained by his estate since the death of that gentleman early last summer, the burden having become too heavy, the Knox Automobile Co., of Springfield, Mass., on Saturday last, 28th ult., made an assignment for the benefit of its creditors to Edward O. Sutton and Harry G. Fisk, who, as trustees, will keep the plant in operation on a curtailed basis.

The estimated assets of the company as a going concern are about $2,000,000, and its liabilities, exclusive of capital stock, are about $1,300,000, of which latter amount nearly $900,000 consists of notes due the Mayo estate. The next largest creditor is the Fisk Rubber Co., to which there is owing on account about $75,000. The Mayo estate and the Fisk company consented to the assignment, the trustees, Messrs. Sutton and Fisk, being sons-in-law of the late Mr. Mayo. Sutton is secretary and assistant manager of the Knox company, and Fisk is secretary of the Fisk Rubber Co., which also largely is owned by the Mayo interests.

In addition to the amounts due the Mayo estate and the Fisk Rubber Co., Knox notes, aggregating $70,000, endorsed by Mr. Mayo, are held by banks. The remaining $270,000 of liabilities is due approximately 300 widely scattered creditors, none of whose claims, it is stated, amount to as much as $5,000. The assets include about $315,000 in real estate, $1,200,000 for finished product and stock in process of manufacture, and about $200,000 in bills receivable.

In addition to the other liabilities there is outstanding nearly $1,000,000 of capital stock, about one-half of which is made up of preferred shares, which creditors of the Knox company accepted in payment of their claims after the company made an assignment in July, 1907.

It was at that time that Mr. Mayo entered the affairs of the company. He was made the assignee, and having assisted in making the Fisk Rubber Co. a splendid property he brought the same methods to bear in reorganizing the Knox corporation. After the creditors agreed to accept preferred stock in the new company in payment of their claims, Mayo became its treasurer and served in that capacity until

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the time of his death at a ripe old age.

The amount of preferred stock issued to creditors was $494,700. It was made up of 8 per cent. cumulative shares, preferred not only as to dividends but as to principal in case of liquidation, over the $500,000 common stock.

For two years after its reorganization, the Knox company made handsome profits and regularly paid dividends on its preferred shares, but thereafter the business took an unfavorable turn and it now develops that but for the ample resources of Mr. Mayo, on which he freely drew, the company must have encountered troubled waters long ago.

Before Mr. Mayo himself died, the Knox company had lost its president, Charles L. Goodhue, by death. Both offices were permitted to remain vacant, and only three months since it was stated that new capital was in prospect and the report was current that a Springfield man who has made a monumental success in the motorcycle business was contemplating entering the Knox company, and would assume the presidency. The report promptly was denied, but in doing so Sutton frankly stated that an accession of fresh capital would be welcomed.

As trustees, Messrs. Sutton and Fisk are continuing the business and by making curtailments they hope to pull through without going into bankruptcy. In their efforts to that end, it is probable that they will have the assistance of a committee of merchandise creditors, which is forming.

Lack of funds to meet current expenses was the immediate cause of the assignment, the underlying cause of which was variously explained after the reorganization of the Knox company. Following its failure in 1907 it gradually entered the "big car" class of manufacture, and also took up heavy trucks, fire apparatus and other special business vehicles and, as always, the development of that end of the industry was slow and called for large outlays of cash, which were not quickly turned over.

Enormous Increase in Engine Exports.

Compared with the record of the corresponding month of the previous year, the export of automobile engines from the United States during the month of July last increased 727 per cent. There were shipped 505 engines as against 61 during July, 1911. The respective values are $7,751 and $66,034, a gain of $58,283, which is equal to 752 per cent. The record for the month of July makes a total of 5,703 engines, which were shipped out of this country during the first seven months of the year. Their value was $642,723. As no records were kept for the corresponding period of 1911, comparison of the two periods of seven months are not possible.

TWO HENDERSON BROTHERS ONCE MORE JOIN FORCES

C. P. Leaves Cole to Assume Presidency of Henderson Company—Other Shifts Brought About by His Change of Base.

The Hendersons, C. P. and R. P., soon will be together again. After three years' service as sales manager of the Cole Motor Car Co., of Indianapolis, C. P. will lay down that work on October 25th to assume the presidency of the Henderson Motor Car Co., of the same city, in which he holds a large interest and of which R. P. is vice-president.

To make room for C. P. Henderson, the president of the Henderson company, L. Carter, will resign, but will retain active identification with the company as chairman of the board of directors, which office has been created for him. Carter, who is a Georgia banker, is a large stockholder not only in the Henderson company but in the Cole company also. R. P. Henderson will remain vice-president and general manager of the Henderson company, but under the new arrangement will devote his time exclusively to the manufacturing end of the business, while his brother, C. P., will handle the sales and administrative affairs. L. S. French will continue as secretary.

When the sales management of the Cole Motor Car Co. is relinquished by C. P. Henderson, on the 25th inst., it will be taken up by J. Frank Morrison, secretary and treasurer of the company. He will be assisted in his financial and secretarial work by John Murphy and Barton Wright. Homer McKee, the Cole advertising manager, will retain that office, and also will act as assistant to the president, J. J. Cole.

Berkshire Again Cramped for Funds.

Removal from Pittsfield, Mass., to Cambridge, in the same State, did not serve to improve the financial health of the Berkshire Motors Co. After having suffered embarrassment in Pittsfield, and undergone reorganization and a slight change of name, the Berkshire company, several months ago removed to Cambridge, where it has been producing Berkshire cars in a small way and where, only recently, it was stated a factory was being erected for its occupancy. Instead of prospering, however, it again is in straightened circumstances, D. B. Barker and James Addison, of the Boston law firm, Andler, Barker & Wood, having been appointed agents to take charge of the company's affairs. Its liabilities are estimated to be $25,000, but its book assets, at least, exceed that sum. The lawyers who are in charge are addressing the creditors with a view of solving the difficulties.

Remy Seeks to Stop Unauthorized Parts.

For one reason or another, the manufacture of spare parts of certain automobile appliances, magnetos, among others, by other than the manufacturers of the devices themselves, has reached proportions little known to the outside public. The Remy Magneto Co., of Anderson, Ind., one of those which has suffered by such "guerilla" productions, so to speak, and having been compelled unjustly to bear the blame for replacement parts for which it was not responsible, has instituted proceedings to discourage the practice. The Remy company already has obtained an injunction against the Monnier Auto Supply Co., of Detroit, restraining it from handling Remy parts, not made in the Remy factory, and has filed application for similar injunctions against the National Motor Goods Co., of St. St. Louis, the Chicago Automobile Supply House, of Chicago, and the Iroquois Rubber Co., of Buffalo.

Motor Car Imports Show Loss.

Imports of automobiles into the United States fell away to the extent of $20,490 during the month of July, the total being $175,741 as compared with $155,251 during July of 1912. France alone increased its shipments, their respective values for the Julys of 1912 and 1911 being $95,433 and $56,142. The imports by countries were:

	July, 1911.		July, 1912.	
Automobiles—	No.	Value	No.	Value
France	22	$56,142	36	$95,433
Germany	14	33,080	6	18,063
Italy	10	14,578	6	11,111
United Kingdom	10	21,469	5	8,810
Other countries	24	50,472	11	21,834
Total	80	$175,741	64	$155,251

For the seven months ending with July, 1912, the number of cars imported was 467 and their valuation was $1,082,301, while the corresponding figures for the term ending with July, 1911, were 492 and $1,067,091.

Case Now Will Build Its Own Cars.

After having built the Case car under contract for a period of some two years, the Pierce Motor Co., of Racine, Wis., finally has been acquired, lock, stock and barrel, by the J. I. Case Threshing Machine Co., of that city. Although, in a public statement, the president of the Case company, several months since stated that its undertaking had in no way committed it to automobile manufacture, it was more or less common knowledge that the acquirement of the Pierce property was in view, and that it probably would be taken over at the close of the present selling season.

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The Week's Incorporations

Detroit, Mich.—Wolverine Castings Co., under Michigan laws, with $10,000 capital. Corporators—William Berg, Harry Norris, John Galen.

Greenville, S. C.—Ellis Car Co., under South Carolina laws, with $15,000 capital; to deal in motor cars. Corporators—A. G. Dale and others.

Tuscaloosa, Ala.—Oak City Garage Co., under Alabama laws, with $5,000 capital. Corporators—G. G. Brownell, Mrs. J. A. J. Brownell, W. E. Mills.

Charlotte, N. C.—United Motor Charlotte Co., under North Carolina laws, with $50,000 capital. Corporators—J. H. Ham, J. H. Ross, W. S. Boyd.

Los Angeles, Cal.—Derry Auto & Carriage Works, under California laws, with $50,000 capital. Corporators—A. A. Derry, C. F. Reinen, J. E. V. Hillier.

Seattle, Wash.—Ballou & Wright, under Washington laws, with $65,000 capital; to deal in motor cars. Corporators—C. F. Wright, O. B. Ballou and others.

Indianapolis, Ind.—Marion Garage & Auto Co., under Indiana laws, with $15,000 capital. Corporators—Burr Custer, Edward S. Payntor, Gilbert P. Butterworth.

Utica, N. Y.—Otis Motor Sales Co., under New York laws, with $10,000 capital. Corporators—Edward J. Otis, William T. Cantwell, T. Harvey Ferris, all of Utica, N. Y.

Chicago, Ill.—Schillo Motor Sales Co., under Illinois laws, with $15,000 capital; to deal in motor cars. Corporators—Leonard Lorimer, E. W. Schillo, Albert G. Schillo.

Camden, N. J.—Blackstone Sales Co., under New Jersey laws, with $2,500 capital; to deal in motor cars. Corporators—Clarence M. Pletcher, Ivan F. Goodrich, Fred Ihrig.

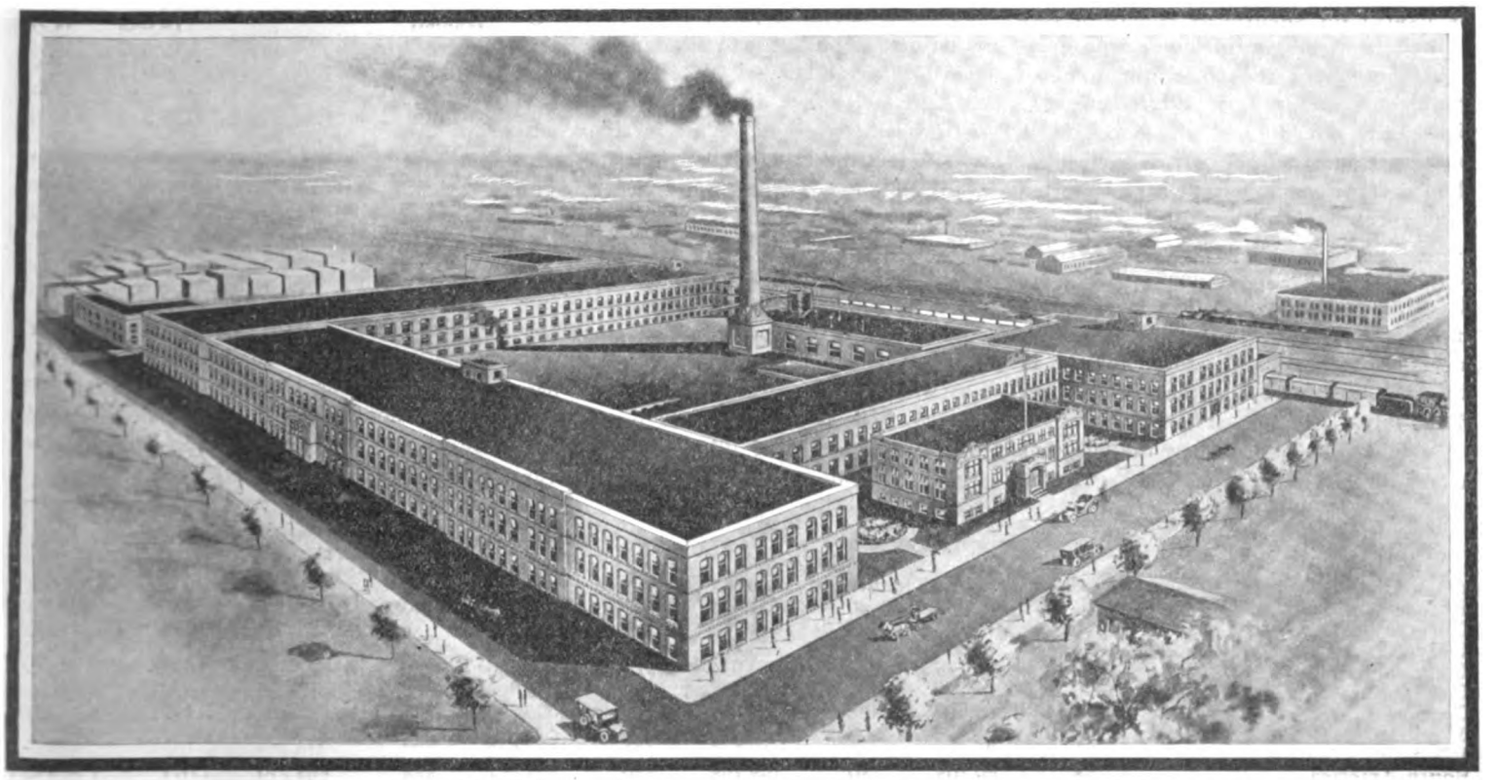
St. Louis, Mo.—Heinrich Automobile Co., under Missouri laws, with $2,500 capital; to deal in motor cars. Corporators—Valentine Heinrich, M. Heinrich, Casper Lykam.

Paterson, N. J.—Standard Auto Co., under New Jersey laws, with $2,500 capital; to deal in motor cars. Corporators—Christian Braun, William F. Drexler, Henry Stoeher.

Brooklyn, N. Y.—Q.-C. Storage Battery Co., under New York laws, with $2,000 capital; to manufacture storage batteries. Corporators—Albert Friedenberg, 38 Park Row, New York City; Albert Friedenberg, 79 Lexington avenue; Leopold Friedenberg, 36 Beaver street, New York City.

New York, N. Y.—Amazon Rubber Smoking Machine Co., under New York laws, with $5,000 capital; to manufacture rubber making machinery. Corporators—Charles T. Green, 2 Rector street; Edwin B. Griffin, 337 West 14th street; Ernest M. Morrison, 206 Lincoln avenue, Brooklyn.

MILWAUKEE PLANT THAT WILL DOUBLE OUTPUT OF KISSEL CARS



Factory at Center and 32d street, Milwaukee, Wis., acquired by Kissel Motor Car Co., in which general offices will be located and which will be operated in addition to the Kissel plant in Hartford, Wis. It provides 200,000 square feet of floor space.

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EXPORTS RETAIN STRENGTH; JULY GAIN 54 PER CENT.

Canada Continues To Be Largest Buyer and Further Increases Its Purchases—Average Values Disclose Peculiar Phases.

Although the importation of American low-priced cars has caused considerable furore among English manufacturers, there are parts of the world which are seeking American cars of a higher rather than a lower price; those, according to governmental statistics, are the three American colonies, Hawaii, Porto Rico and the Philippine Islands, and the comparative imports of these geographic divisions for the Julys of 1911 and 1912 show substantial increases in the average value of the cars imported. The figures for exports of American cars to all parts of the world indicate progress in this branch of the trade, the total of cars and parts for July, 1912, being $2,305,668, and for July, 1911, $1,496,390, a monetary gain of $809,278, or 54 per cent.

The average valuations of cars imported to the three colonies were: Hawaii, 1911, $1,536; 1912, 1,789. Porto Rico, 1911, $1,500; 1912, $2,324. The Philippines, 1911, $872; 1912, $1,646. Despite the increased valuation of the total of cars sent to these American possessions the total number in July, 1912, was three less than in the preceding July. Colonial trade, however, is on the gain, as is indicated by the fact that whereas these countries took 543 cars in the first seven months of 1911, the number for the corresponding period of 1912 was 894.

Of the twelve geographic divisions into which the Federal government separates the exports, Canada, as that country has done for some time, took the largest number, 462 cars, valued at $686,889, which is an increase of 60 per cent. in number and 88 per cent. in valuation over its importations for July, 1911; also Canada's gain, $320,900, was the largest recorded among the twelve divisions. South America is next in rank in amount of gain; in July, 1912, it took cars valued at $198,798, while in that month of 1911 the valuation was $69,105, a gain of $129,693, or 19 per cent.

The United Kingdom, however, ranks next to Canada in the valuation of cars imported from the United States, the amount being $230,924. Next in order are South America, $198,798; British America, $184,034; Other Europe, $124,672, and Asia and Other Oceania, $124,086. The average value of the cars sent to the United Kingdom in July, 1911, was $957, while in July, 1912, it was $669, a decrease of $288. This is below the average for all foreign countries, which in July, 1911, paid an average of $1,078, and a year later $1,041. The average price for South America was: July, 1911, $1,439, and July, 1912, $1,104.

The first seven months of the years 1911 and 1912 indicate a growth in exportations; during the former period 8,935 cars were shipped, and during the latter, 15,195, a numerical gain of 6,260, which on a percentage basis is 70. The valuations in the first seven months of 1911 were $9,194,564, and in the same portion of the present year, $15,418,172, an increase of $6,223,606, or 67 per cent. In the summary of cars and parts to foreign countries and the three American possessions it is seen in the subjoined table that for the first seven months of 1912 cars and parts valued at $19,831,880 were exported, and for the first seven months of 1911 the value was $12,096,718, a gain of $7,735,101, or 64 per cent.

Increase in Value of Exported Tires.

The volume of tires exported to foreign countries and the American colonies by the United States continues to grow with the months, the record for the shipments during July, 1912, showing an increase of 71 per cent. over July, 1911. The money values represented were $255,313, as against $438,218, a gain of $182,905. The exports were distributed as follows:

	July 1911	July 1912
Foreign countries	$218,883	$390,236
Hawaii	18,954	35,228
Porto Rico	10,631	10,955
Philippines	6,845	1,799
Total	$255,313	$438,218

The record for the first seven months of 1911 and 1912 shows respective valuations of $1,726,637 and $2,152,755, a gain of 25 per cent. or $426,118.

Detroit Body Builder Enlarging Plant.

The Herbert Mfg. Co., of Detroit, which manufactures automobile bodies, has filed plans for a new factory building at 1123-35 Vermont avenue, in that city. It will be a one-story brick structure, 130 x 144 feet, and will cost about $45,000.

	July				Seven Months Ending July					
	1911		1912		1910		1911		1912	
Automobiles—Exported to—	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.
France	33	$45,544	36	$31,843	181	$567,788	273	$326,800	430	$333,063
Germany	16	14,357	22	21,188	78	227,546	73	91,283	252	199,726
Italy	32	20,508	36	26,795	96	333,230	137	169,914	176	169,252
United Kingdom	229	219,153	345	230,924	979	1,903,186	1,875	1,653,995	3,676	2,739,948
Other Europe	60	70,522	147	124,672	316	495,949	508	492,222	1,023	859,446
Canada	289	365,989	462	686,889	2,645	2,600,604	3,724	3,925,265	5,197	6,253,889
Mexico	7	18,285	9	14,683	177	330,055	147	258,064	125	183,020
West Indies and Bermuda	21	21,454	13	12,166	133	216,033	175	210,432	196	208,303
South America	48	69,105	180	198,798	180	205,487	444	604,229	1,071	1,288,543
British Oceania	168	156,951	209	184,034	252	173,278	938	858,196	2,128	1,948,505
Asia and other Oceania	91	75,106	133	124,086	102	122,439	477	428,119	843	878,678
Other countries	31	27,833	43	46,559	175	193,891	164	176,045	378	355,799
Total cars	1,025	$1,104,807	1,635	$1,702,637	5,314	$7,369,486	8,935	$9,194,564	15,195	$15,418,172
Parts of (except engines and tires)	....	255,282	....	395,296	....	1,272,058	....	1,901,707	.....	2,893,753
Total	1,025	$1,360,089	1,635	$2,096,933	5,314	$8,641,544	8,935	$11,096,271	15,495	$18,311,925
To American Possessions—										
Hawaii—										
Cars	27	41,467	47	83,734	224	434,568	202	393,224	344	567,503
Parts		4,251		10,431		37,441		48,495		39,895
Porto Rico—										
Cars	27	40,496	23	53,454	97	168,067	154	307,800	263	406,180
Parts		5,820		5,834		54,007		44,280		74,439
Philippines—										
Cars	50	43,586	31	51,016	92	110,040	187	188,142	287	395,480
Parts		681		4,266		9,808		18,506		36,458
Total	104	$136,301	101	$208,735	413	$813,931	543	$1,000,447	894	$1,519,955
Grand Total	1,129	$1,496,390	1,736	$2,305,668	5,727	$9,455,475	9,478	$12,096,718	16,389	$19,831,880

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In the RETAIL WORLD

The Osceola Garage Co. is building a brick garage in Kissimmee, Fla.

George Bessenger, of Sheboygan, Wis., has sold his garage to Walter Ellinger.

B. H. Strough has commenced the construction of a garage in Glendale, Ariz.

George P. Dier plans to erect a garage in Bozeman, Mont. It will cost $10,000.

George Stagge and Forest Decker are about to open a garage in Franklin, Ohio.

The Rozell-Harris Co. has established a garage in Hackensack, N. J., on Mercer street.

Babst & Scheffler, of Barnesville, Minn., are about to build a garage; it will cost $4,000.

George Thomas has opened a new garage in Johnstown, Pa. It has a capacity for 25 cars.

Grant Kail and Vigor Larsen are remodeling a building in Lorrville, Iowa, for garage purposes.

Henry Golden, of Taunton, Mass., is building a garage at Leonard street and Presbrey avenue.

Fred St. Pierre, of Waterbury, Conn., has purchased the Woodbury (Conn.) Garage of Paul Bronson.

Maurice L. Galvin, of Covington, Ohio, has secured plans for a garage to be built on Sanford street.

J. J. Young has broken ground in Brownsville, Tex., for a new garage; its cost will be $20,000.

Trux Griffin is building a garage in Palmerton, Pa. When completed it will accommodate 48 cars.

A. Rohkam, of 1048 Oakdale avenue, Chicago, is about to build a one and one-half story garage; it will cost $7,000.

The Fort Madison (Iowa) Auto Supply & Engine Co. is about to build a two-story brick garage at Second and Cedar streets.

C. G. Bundy, of Santa Monica, Cal., has accepted plans for a garage, 75 x 116 feet; it will be built at Third and Utah avenues.

Cooper Garage is the style under which a new business is about to be opened up in New Rockford, N. D. The garage is 44 x 60 feet.

L. W. Sherlund will build a concrete garage, 50 x 100 feet, in Brainerd, Minn. The site he has secured is on South Sixth street.

The Rockingham Garage in Portsmouth, N. H., has been taken over by Dickey & Edwards; they also have secured the Hudson agency.

George H. Junod, of Athens, Ohio, has commenced the razing of a garage on Carpenter street and will build a new one; it will be 80 x 100 feet.

J. H. Cain and F. A. Oehm are about to build a one-story garage in San Francisco, at Geary street and Ninth avenue; the estimated cost is $5,000.

John N. Bleeck, of St. Louis, Mo., has secured authority to erect a two-story garage at 2914-16 North Grand avenue; the estimated cost is $15,000.

Frank C. Fickling, who is well known in the accessory trade in Washington, D. C., has opened up at 1530 14th street under the style National Auto Supply Co.

The Auto Shop is the style chosen by John Cline and Dennis Beglin for a repairing business they have established on East Second street in Plainfield, N. J.

The Moline Automobile Co., of Moline, Ill., has established a branch in Los Angeles at 1518-1522 West Washington street. It is in charge of O. J. Root.

Ira A. Fairbank, of Waterloo, Iowa, has let the contract for a garage, 60 x 100 feet, to be erected on Fifth street, west; the plans call for an expenditure of $14,000.

The Darford Motor Co. is about to build a garage, 100 x 84 feet, at Central avenue and Hudson street, Newark, N. J. The plans call for an expenditure of $25,000.

Permission has been granted to Robert H. Fowler to erect a two-story garage at 500 West Pico street, Los Angeles, Cal. He will expend $12,000 on the building.

Permission has been granted to Oscar Harris, Martin White and others, in Paterson, N. J., to erect a brick garage at 725-27 Madison avenue; its cost will be $2,500.

Edward Dale and F. M. Buffehr, of Tonopah, Cal., have bought the Boulevard Garage, in Glendale, in the same State; the new owners already have taken possession.

Robert Herrick and John McDonald, of Marshfield, Wis., have purchased the Hughes Garage from Orrin R. Hughes; the style has been changed to Hub City Auto Co.

Plans are being prepared for a garage to be erected by Dow & Green, on Taylor street, near Geary street, San Francisco; estimates of the work indicate a cost of $35,000.

The Cadillac Automobile Co., of Brooklyn, N. Y., has bought property at 3, 5 and 7 Lafayette avenue, and will erect a sales and repair building; $100,000 will be expended.

Architects are preparing plans for a garage which Rufus H. Brown, of Brooklyn, N. Y., is to build at Ocean avenue and Avenue L; it will be two stories, of brick, and will cost $8,500.

Charles W. Keniston, of Hawarden, Iowa, has sold his automobile and implement agency to Steele & Metcalf; the latter concern is in the same business and now will broaden its field.

The stable connected with the Central Police Station at Canal and Haymarket streets, Providence, R. I., has been transformed into a Municipal Garage; the city owns seven or eight cars.

Isaac Kempner, Irving S. Hirsch, Harry M. Westcott and Asa Gracie have organized the Westcott Motor Truck Co. in Little Rock, Ark. The company will operate a transfer business.

Permission has been granted to Coerper Bros., of Milwaukee, Wis., to erect a concrete garage, 60 x 120 feet, on Grand avenue, between 27th and 28th streets; it will represent an expenditure of $12,000.

Oscar Werner has sold the Los Angeles Simplex agency to George A. Bental, of the Coleman & Bental Co. The latter concern now has the entire Pacific Coast agency for Simplex and Mercer cars.

George Tolman, who is well known to the trade in Boston, Mass., has entered the used car field in that city under the style Massachusetts Auto Clearance House; he is located at 108-10 Massachusetts avenue.

The Reo business in Cleveland, Ohio, has been taken over by Henry J. Adams, who for a number of years has been a Reo sales organizer in northwestern Ohio; the factory branch in Cleveland has been discontinued.

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F. W. Winbolt, garage operator in Princeton, Ill., has been thrown into bankruptcy; his assets are $3,500 and his liabilities $4,000. He gives as the reason for his failure the unwillingness of car owners to pay living prices.

The Union Garage, which was established in Adrian, Mich., by a number of automobile owners, has been sold to M. S. Gould, who will continue the business as heretofore; Gould formerly was employed by the Lion Motor Car Co.

Fred Michaels and C. T. Boyd, of Cedar Falls, Iowa, have sold their interests in the Lawn City Garage to W. M. Lang, H. Brinkman and W. P. Rothermel, all of Oelwin, in the same State; Michaels and Boyd retain their cars and tools and will reopen in another location.

The Union Motor Car Co. is a new entry in the garage field in Washington, Pa. It will occupy the building at 442 West Chestnut street, formerly occupied by the Clutter Auto Co. Besides operating a garage, it will sell accessories and will handle Mitchell, Empire and White cars; M. C. Burchfield is manager.

William Schuh, who has been connected with the Schrup Motor Car Co. in Dubuque, Ia., as a mechanic, will enter the garage trade for himself; temporarily he will occupy the McCarthy garage at Locust and Seventh streets, but January 1 will have a new structure on Clay street between Ninth and Tenth.

W. C. Dennis and L. P. Kuttler, who operate in Rock Island, Ill., under the style Dennis-Kuttler Machine Co., have taken over the repair business of the Rock Island Auto and Tire Works at Third avenue and 34th street; W. H. Bolles retains the tire repair and supply department and remains in the old location.

The Superior Motor Car Co., has entered the trade in Middletown, Ohio, in the garage on Canal street formerly occupied by the Middletown Motor Car Co. Fred Van Sickle and Frank Crocker compose the new firm; Crocker has been connected for some time with the Weisers Motor Inn in Hamilton, in the same State.

Recent Losses by Fire.

Athens, Pa.—Athens Motor Co., garage damaged. Loss, $5,000.

Beverly, Mass.—Sprague, Breed & Brown, garage damaged. Loss, $1,000.

Belleville, N. J.—Hardman Tire and Rubber Co., factory damaged. Loss, not stated.

Richland Center, Wis.—E. B. Prouty Co., garage damaged. Loss, $10,000.

Tacoma, Wash.—W. D. C. Spike, 2511 South 14th street, garage damaged. Loss, $5,000.

SEEK DEALERS' SUPPORT FOR SALES CONVENTION

Indianapolis Bids Them Welcome and Wants Their Experiences—Subjects That Are To Be Presented by Experts.

If automobile dealers in considerable numbers are not present at the "National Salesmanship and Advertising Convention" at Indianapolis on Tuesday and Wednesday next, 8th and 9th inst., it will not be the fault of J. J. Cole, Homer McKee, D. B. William and the other promoters and planners of the undertaking. They are extending unlimited invitations to all dealers, as well as to all other tradesmen, for while a number of formal addresses will be made, it is the intention to give to the occasion the flavor of an "experience meeting" by seeking the personal experiences of most of those who will be present.

The convention will be held in the Claypool Hotel in Indianapolis and will be presided over by Walter D. Nesbit, of Chicago. The address of welcome will be made by H. O. Smith, president of the Premier Motor Mfg. Co., of Indianapolis, after which the following set of papers will be delivered:

"Headwork in Salesmanship," John G. Jones, Alexander Hamilton Institute, New York City; "The Opportunity of the Automobile Dealer," T. J. Zimmerman, Opportunity Magazine, Chicago; "Why I Thought of a National Salesmanship and Advertising Convention," J. J. Cole, president of the Cole Motor Car Co., Indianapolis; "The Co-ordination of Advertising and Sales," E. Leroy Pelletier, advertising director of the Flanders companies; "How to Use Advertising in the Retail Game," John Lee Mahin, Mahin Advertising Co., Chicago; "Ideal Salesmanship," Elbert Hubbard, East Aurora, N. Y.; "How to Get the Co-operation of Your Local Papers," B. F. Lawrence, Indianapolis Star; "Business Methods and the Motor Car," Charles A. Bookwalter, ex-mayor of Indianapolis; "How to Spend Your Advertising Appropriation," John C. Wetmore, New York Evening Mail.

Changes Among Prominent Tradesmen.

A. B. Cordner, manager of the General Motors Truck Co.'s New York branch, has resigned that office. He has been succeeded by T. P. Myers, who previously was general service manager of the General Motors truck factory in Pontiac, Mich.

William Kelly has been promoted to the superintendency of the Oakland Motor Car Co.'s plant in Pontiac, Mich. He succeeds to the vacancy caused by the death of Thomas W. Wilson, who three weeks ago was killed in an automobile accident.

H. A. Farr, manager of the Portland (Ore.) branch of the United States Tire Co., has been transferred to the management of the Seattle branch. He succeeds H. A. Jones, who has engaged as manager for Ballou & Wright, of Portland, which company handles G & J tires. C. H. Mayer, one of the United States Tire travelers attached to the San Francisco house, has been promoted to management of the Portland branch.

Garagemen Plan To Get Cheaper Gas.

Having completed organization and elected officers and directors at a meeting at Reisenweber's, Seventh avenue and West 58th street, Thursday evening, 26th ult., the New York Garage Association has commenced its activities with two primary definite objects in view; one is to secure contracts with an oil company whereby a lower wholesale rate for gasolene will be put into effect, the other is to endeavor to secure the withdrawal of a fire regulation which provides for the installation in every garage of a gasolene separator, a device placed near the door to prevent gasolene from getting into the street and which is said by the garagemen to be obnoxious and worthless. Theodore K. McCarthy, counsel for the association, was instructed to file a brief with the fire commissioner.

The officers elected are: President, L. J. Joscelyn; vice-president, William Burrows; secretary, Charles H. Potter; treasurer, George Rainey. Directors: Bronx, Herman Ellenbrock and C. A. Otten; Washington Heights, H. L. Hulse and E. D. Wright; Harlem, C. W. Kenney and Charles H. Potter; Upper West Side, G. Rainey and G. Bierman; Lower West Side, M. Segal and O. W. Lowell; East Side, J. Stafford and W. Burrows; Central, L. J. Joscelyn, and Brooklyn, J. J. Dobbins and Charles McLoughlin.

To investigate the matter of obtaining gasolene contracts a committee was appointed consisting of Charles H. Potter, William Burrows, J. Stafford and M. Nicholai. These men will report the results of their work early next week to the board of directors.

Hood Takes Over Its Shawmut Offspring.

The Shawmut Tire Co., of Boston, Mass., which was an offspring of the old-established Hood Rubber Co., of that city, has been taken over by the latter and the tire company, as such, has ceased to exist. The manufacture of the Shawmut tire will be continued, however, and it is not unlikely to be supplemented by a new one which will be styled the Hood.

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THE MOTOR WORLD

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor

S. P. McMINN HOWARD GREEN
R. W. SHERMAN E. F. HALLOCK

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Advertising Manager

HOWARD L. SPOHN LOU McDOWELL

WESTERN ADVERTISING MANAGER
W. H. TRIPP, 1001 Ford Building, Detroit
GUS. H. JOHNSON

DETROIT, 1001 Ford Building CHICAGO, 1441 Monadnock Block
MAXTON R. DAVIES J. FRANK GILMORE

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GIVING REPAIRMEN A BETTER NAME.

For reasons that do not require a long-winded explanation, there is a lingering tendency on the part of motor car owners to regard a repair shop somewhat in the light of a stronghold of the enemy and to consider a business transaction with such an establishment a sort of battle in which one side or the other is worsted as a matter of course. The idea, whether definitely formed or merely a vague, perhaps sub-conscious instinct, is that the repairman always is on the alert for opportunities to make extortionate charges and that the owner perforce must also be on the alert to protect himself.

The amazing persistence with which an unfortunate experience sticks in the human memory is responsible for a very large proportion of this distrustful attitude, for though there undoubtedly are repairmen who do not hesitate to "pad" their bills, they are far less numerous than once was the case, and nine out of ten owners who can wipe from their memories recollections of former extortions and who use a little discretion in selecting repair shops, will agree that they have little to complain of at the hands of this much maligned class of mechanical experts.

There are so many shops in the business that competition has the inevitable effect on charges; there is too much repair work being done every day for the average motor car owner to be in ignorance of what constitutes fair remuneration for work, provided he takes the trouble to find out; and, what is far more important, there are as many square, upright men in the repair business as in any other branch of mechanical work. Taking everything into consideration, it seems about time that the time-honored stigma be removed from automobile repairmen as a class.

THE DIVORCE OF SPORT AND TRADE.

Abandonment of the A. A. A. national reliability tour is regrettable but not surprising. It merely is the culmination of the disinterest which has been responsible for the sadly shrunken entry lists of the past summer and for the indefinite postponement of no inconsiderable number of events, the promotion of which was undertaken in various parts of the country.

Though interested men may whistle to keep up their courage and may present varied arguments to sustain their assertions that the sport has not declined, anyone with even half an eye can see that it has diminished and diminished greatly. The truth of the matter is that the trade has wearied of participation in sport and wants little, if anything, more to do with it. It is a situation which was to have been expected.

As Motor World many times during the past several years remarked, sport and business do not mix. At best, sport is but an artificial outgrowth of business, if it is not a growth thereon. Intense interest which may be displayed when enthusiasm runs high quickly is dissipated when business sense returns to a normal state.

In forecasting the present situation, Motor World long ago pointed out that if automobile sport was to endure, amateurism must be encouraged and fostered. It was neither encouraged nor fostered, and if the only semblance of sport that remains is that form of it which is undertaken by professional promoters and engaged in by professional performers, the blame for such conditions will not be hard to place.

DISCUSS THE USED CAR PROBLEM.

Whenever men concerned with the welfare of the industry "reason together," the used car always plays a large part in their deliberations. It was almost a matter of course, therefore, that, although not listed as a topic for discussion, the used car repeatedly intruded itself on the sales managers who participated in the Board of Trade's conference on Monday and Tuesday of the present week. That the used car is the most distinct shadow, if not the only one, that overspreads the industry freely was admitted, and that anything that offers even a measure of relief will be welcomed was made equally plain.

It is certain that the greatest measure of relief is promised only by full and open discussion, such as Motor World has invited and has endeavored to stimulate by its cash offer of $50, $25, $15 and $10 for the best respective articles dealing with the subject. Several notable papers already are in hand, the first of which will be published next week. Meanwhile, there is no man in the industry who is too high, or none who is too humble whose opinions are not worth ventilating.

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ELECTRIC VEHICLES TO BE FEATURED AT ELECTRIC SHOW

Twelve Manufacturers Booked to Make Displays in Grand Central Palace Next Week—"Stunts" to Provide Entertainment.

What may be styled a close approach to an exclusive electric vehicle show is due to be opened in New York City on Tuesday next, 8th inst. It is scheduled to follow the rubber show in Grand Central Palace, and, according to present indications, it is likely to be an even better exposition of electric transportation methods than were its predecessors of several years past.

An even dozen manufacturers of pleasure and commercial vehicles have contracted for space, and their exhibits are to be augmented by the displays of four battery manufacturers. The complete list is as follows: General Vehicle Co., General Motors Truck Co., Buffalo Electric Vehicle Co., Anderson Electric Car Co.; Lansden Co., Studebaker Automobile Co., Atlantic Vehicle Co., Baker Motor Vehicle Co., S. R. Bailey Co., Champion Electric Vehicle Co., Cleveland-Galion Co., Ward Motor Vehicle Co., Edison Storage Battery Co., Electric Storage Battery Co., Philadelphia Storage Battery Co., Gould Storage Battery Co.

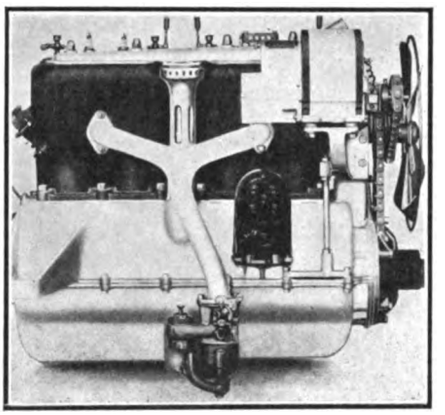
Following the plan that was inaugurated last year, a miniature "track" will be laid out on the third floor, and on it the various makes of electric pleasure cars will be demonstrated. Incidentally, it is planned to carry out a program of "stunts" on the track to relieve the tedium of demonstrating and to furnish amusement for those who are not lucky enough to hold tickets which will entitle them to rides. Just what the "stunts" will be has not as yet been made plain.

Of course there will be other things besides electric vehicles, though it is doubtful if anything else will attract a greater amount of attention. The air will be virtually surcharged with electricity, and the exhibits will range in scope from just plain wires to egg beaters, and lighting apparatus and heating plants, and hosiery mills and a complete tobacco plantation, including what has been styled the world's smallest cigarette factory. Also there will be a government exhibit, in charge of "jackies" from the Brooklyn Navy Yard, showing the construction of the Gatun dam in the Panama Canal and the operation of the huge piece of mechanism under the gentle persuasion of electricity. The exhibition is styled the New York Electrical Exposition and Automobile Show, and will hold forth for just 10 days, the doors of the big palace being formally closed on the 19th inst.

Little Known Features of Well Known Cars

Magneto location on Marion engines, that is to say, the new location which has been adopted as standard practice for the newer series of Marion cars that now is coming through the factory, exhibits no little ingenuity on the part of the engineers who are responsible for the innovation and at the same time effectually disposes of several of the problems inherent in painstaking design.

Though there is little novelty in placing the magneto—it is a Splitdorf instrument—transversely to the crankshaft, such practice being fairly common among the products of a number of well known manufacturers, Marion engineers have carried the idea a little further and have placed the instrument nearer the center of the engine where it occupies a more protected position and where accessibility is more pronounced. Not merely incidentally, the position of the instrument places the breaker box and the wiring connections where they may be reached for adjustment instantly and easily.



MARION MAGNETO LOCATION

The actuating mechanism of the magneto is a worm and wheel drive, which by reason of its efficient and silent action is peculiarly fitted for such work. The worm is fastened directly to the crankshaft of the engine, thus obviating the necessity for disturbing the magneto timing in the event that it becomes necessary to take down the camshaft train of gears. Another excellent feature is that the worm gearing is effectually lubricated by splash from the crankcase compartment, and, by reason of the short driving shaft which is possible, danger of damage from twisting strains is reduced to a point where it is practically negligible.



October 3, Milwaukee, Wis.—Pabst and Wisconsin trophy road races, promoted by the Milwaukee Automobile Dealers' Association.

October 4-5, Sioux City, Ia.—Track races under the auspices of the Sioux City Automobile Club.

October 4-6, Peoria, Ill.—Track races under the auspices of the National Implement Co.

October 5, St. Louis, Mo.—Annual reliability run of the Automobile Club of St. Louis.

October 5, Brooklyn, N. Y.—100-mile consistency run of the Long Island Automobile Club.

October 5, Milwaukee, Wis.—Grand Prize road race, promoted by the Milwaukee Automobile Dealers' Association.

October 7-12, St. Louis, Mo.—Outdoor show in Forest Highlands Park, under the auspices of the St. Louis Automobile Manufacturers and Dealers' Association.

October 12, Providence, R. I.—Track races under the auspices of E. O. Hustudt.

October 12, Salem, N. H.—Road races on the Rockingham Park course under the auspices of the Salem Automobile Club.

October 12, Springfield, Ill.—Track races promoted by the Illinois State Board of Agriculture.

October 12, Salem, N. H.—Track races promoted by the Rockingham Park Automobile Club.

October 21, Chicago, Ill.—Chicago Motor Club's reliability tour around Lake Michigan.

October 21-25, Chicago, Ill.—Chicago Motor Club's reliability run.

November 8-16, London, England—Society of Motor Manufacturers and Traders' annual show in Olympia Hall.

December 7-22, Paris, France—Paris Salon.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

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CHANGES WROUGHT BY "FORCING THE SEASON"

Fall Trade Now Better Than Spring Demand, But Failure to Receive "Early" Models Plays Havoc With Dealers' Prospects—Close-to-the-People Salesman Illuminates Situation and Shows Why Rural Demand Must Be Met in the Fall.

"What's the matter?" said the dejected appearing salesman, repeating the inquiry of a Motor World man. "We're 'up against it;' that's what's the matter. The factory has just informed us that it can deliver none of the new models for at least a month, and I suppose that means two months. We are out of it for the rest of this year. Spring sales? Fiddlesticks! It's the fall sales that count nowadays, but if many of the big moguls in the factories realize the fact they have queer ways of showing it.

It's the Fall Sales That Count.

'Yes, I mean exactly what I say; it's the fall sales that count, by which I mean that more sales are made in the fall than are made during any other season of the year. Last fall we sold thirty odd cars as against twenty odd during the spring months, and the way we now are situated our fall trade has been wholly lost. The man with the goods to deliver is the man who will get the orders."

The salesman who gave voice to these expressions is no myth; he is a bright, capable man attached to an automobile establishment which handles a fairly well-known car in a considerable and desirable portion of New York State. He is no floor salesman, either; his business is to go out among the people and not merely follow up inquiries but actually to create prospects.

Close-to-the-People Viewpoint.

In addition to a fixed salary, he draws also a modest commission on each sale that is made, which acts as an incentive to keep him constantly circulating. His travels take him into all sorts of places and, naturally, require that he meet all sorts of people at all sorts of times. His viewpoint, therefore, is a close-to-the-people viewpoint and one into which theory does not enter.

"Yes, sir," he repeated with emphasis; "the trade has changed and the factory that is not able to supply cars during the early fall months simply is turning money from its doors and making business for its rivals; for when men are in the humor of buying, and have the money to pay for automobiles, the good talker who gets close and who delivers cars to them is the man who will get their cash.

Prospects Grow Weary of Excuses.

"Of course, factory salesmen who visit dealers only ,and the heads of factories who deal only with executive affairs, glibly will make believe that it is possible for any good salesman to hold his prospects in line and keep them waiting from week to week, or from month to month, until a new model appears, but I know better. They get weary of excuses and delays. I have spent nearly five years in actually creating buyers, and I think I ought to know. It may be true of city people, but it is not true of those in the rural districts. It is during the fall months that the latter have money in pocket and that is the only time when most people buy automobiles, or seriously think of buying them.

Why Few Farmers Buy During Spring.

"If you stop to think of it," said the salesman as he warmed to his subject, "you will realize that what I say is perfectly logical. In the early spring, most of the farmers and other agriculturalists who are likely to purchase automobiles, lay out two, three or four thousand dollars for fertilizer alone, and, after the crop is planted, he's a wonderful salesman who can induce them to purchase a car until the plants are well above ground. It is almost a waste of time to 'talk automobiles' to them until the crops are green, and then the salesman's work usually is largely missionary work.

Farmer Cannot Forecast His Yield.

"Although his crops are growing, the farmer never is able to tell how things will turn out or how great will be his yield until the summer practically has spent itself. Only this summer, during a dry spell, several such prospects would give me no real encouragement until rain fell, and they knew their crops were safe. They then became real prospects, but they did not have the money until the early fall, when their crops had been gathered and paid for, and now I cannot realize on all my missionary work because the factory cannot deliver cars.

"Oh, yes, I know that the popular notion prevails that farmers, and other people who live in rural districts, are 'rubes' and, therefore, do not know the difference between an old model and a new one, but it is about time that that notion was blown to flinders. There's nothing in it, and the man in the factory who entertains the notion is simply fooling himself. The man in the country is just as intelligent and as discriminating as the man in the city, if not more so. He will ask more questions and go deeper into details, and when he proposes to spend money for an automobile there's no use trying to deceive him. It never pays in the long run, any way. He wants the latest model, and he will have no other; he knows that they are supposed to be ripe along about August, and if he cannot get a new model in September or early October he becomes a poor prospect, because, as I have stated, in the springtime his mind is full of crops and how they are likely to turn out.

Others Whose Money Comes in Autumn.

"The farmer is not the only man in the country whose thoughts of automobiles are strongest in the early fall. When he has money the store keepers with whom he trades have more money; and there is another numerous class, the country hotel keepers, particularly in the summer resort regions—and there are tens of thousands of them—who constitute good material to be cultivated by the automobile salesman who follows my line of work in going out among the people. It is at the end of the vacation season that these hotel proprietors know where they stand, and how much money they have made, and it is then that they are most disposed to buy automobiles.

Effect of Makers "Forcing the Season."

"Perhaps when they began 'forcing the season' and bringing out next year's models during July and August, instead of February and March, the automobile manufacturer did not realize what the effect would be, but the effect is exactly as I have stated it. Possibly the now overwhelming tendency to wipe out the 'annual model' feature of the business is born of sudden realization of what has come to pass; but, take it from me, it will be more than a year or two before either the 'rubes' or city folk can be brought to see the difference."

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KEEPING AN ADEQUATE AND RELIABLE SHOP ORDER RECORD.

The Neuman-Lane Co., 1240-1252 Woodward avenue, Detroit, which sells Pierce-Arrow, Chalmers, and Rauch & Lang electrics, has evolved a shop order system that is not only complete but easy to handle. It provides for every contingency including repairs. It gives what Harrington Emerson, the "efficiency expert," terms a "complete, reliable, adequate and immediate" record of every transaction.

Cards Made Out in Triplicate.

This order is made out by the repair man who has a desk in the garage where all cars enter. It is made out in triplicate, white for the office, yellow for the garage, where all washing and polishing is done, and sales of oil, gasolene and accessories are made, and on thicker stock for the repair department foreman. The repair department card differs from the others in that on the reverse side is a blank space for listing materials furnished and time put on the job. All cards are numbered consecutively and every card must be accounted for to the bookkeeper. At the completion of a job the repair department card and the garage card, which is kept on the desk of the garage foreman, are sent to the accounting department and these records transferred to a "Cost Card," which is used as the basis for a ledger charge. This latter card is filed under "Repair Order No."

Affords Complete Record and Check.

This gives a very complete office record for every transaction and at the same time provides a reliable check on the repair shop, garage, etc. All gasolene, oil and other sales made for cash are recorded by entry on an Egry Cash Register, and the foreman keeps the cash, making an accounting once at the end of each day, thus keeping the office at all times in touch with these garage details.

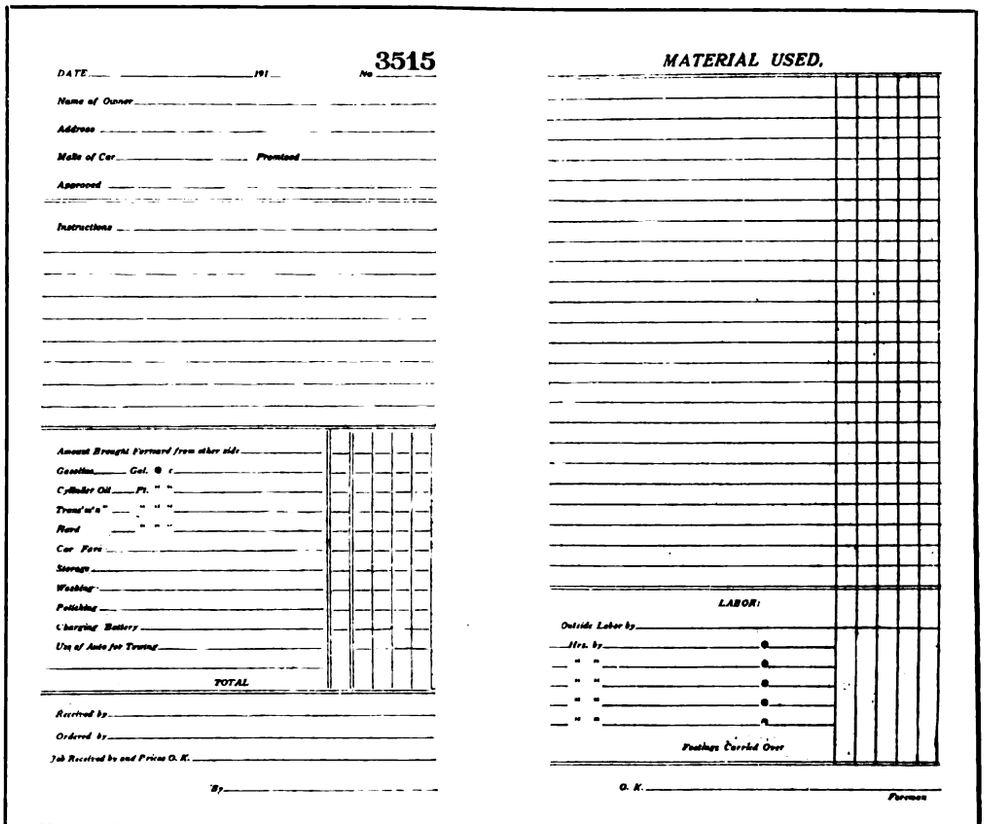
Keeping a "Running Inventory."

This same concern have paid much attention to the accounting end of their shop, which is one of the largest and best in the country. They keep a "running inventory." That is, their purchase ledger shows at all times what their stock of parts, materials, etc., inventories at the end of each day.

Everything that comes into the garage except oil, gasolene and complete cars is received by the "stock clerk." Tires, accessories, parts, etc., are all kept in the stock room and released only on requisition, which is numbered consecutively and shows at the same time cost of part or accessory and selling price. Everything billed out is credited in the ledger to "stock department" at net price, and everything that comes in is charged to it. The difference between debits and credits not only shows the condition of stock at all times, but the profit column shows the earnings.

How Free Replacements Are Handled.

In providing free replacements, the part replaced is charged on the requisition blank to the customer, and this requisition



Neuman-Lane Shop Order System—These cards are made out in triplicate, on white paper for office, on yellow paper for garage, on cardboard for repair department, the latter having a reverse side, "Material Used," which is O.K.'d by the foreman.

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which is used to make office charges for material, bears a stamp reading "Post—Do not include on statement." Thus a complete record gets on the books and the customer is not annoyed by receiving a bill for something that perhaps he thinks ought to be free. On the other hand, the dealer is protected in case the manufacturer refuses to replace the part. If the part is billed to the customer, a rubber stamp bearing the following legend is stamped on the invoice, "Above parts have been sent to the factory for inspection. If credit is allowed, we will credit your account allowance made by manufacturer."

MAKING THE MOST OF STORE RENT AND DISPLAY SPACE.

Here's a Live Wire Dealer Who Thinks and Acts.

Over the door of the private office of George Reason, manager of the Detroit branch of the Cartercar Company, 1246 Woodward avenue, Detroit, is a sign reading, "If you know more about the business than the boss, show him." That, in a nutshell, is one of the secrets of this branch store, which is one of the most successful in the country.

Warm Them Up.

George Reason has an open mind. He has ideas of his own that relate to the fundamentals of the automobile business and extend to every detail, but he is always willing and ready to be shown some better way. Even the porter feels that he can make suggestions without having cold water sprinkled over them. The result is seen in what is one of the neatest, best appointed and most business-like showrooms in the country.

Care Used in Choosing Location.

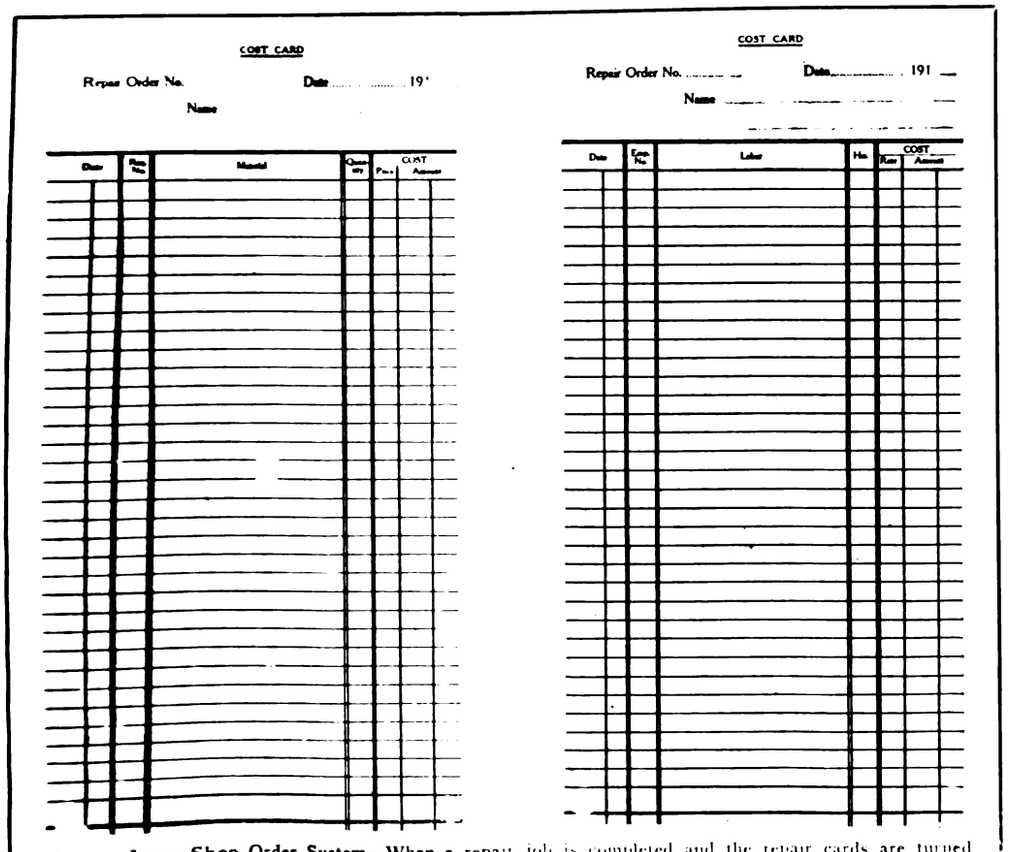
When this store and garage was erected one year ago, it was virtually in the residence district—a little too far from the business center, many thought; but it was an ideal location for a store, because across the road to the south is a flat building that stands some twenty feet back from the sidewalk, which permits the Cartercar display window to be seen from the street cars a block away. This affords street car passengers a long look at the exhibit of cars. Incidentally, it gives a much better lighted interior effect than could be otherwise secured, and there are none of the deep dark shadows that spoil so many displays.

Window Display Space a Great Asset.

"We regard our window display as one of our most important assets," said Manager Reason. "We consider it a big opportunity; we figure that a good part of the rent is based upon the fact that so many people pass our store every day—and what's the use of paying a premium for location unless you cash in on it?"

Give Each Car a Chance to Talk.

"To this end we seek to make our display as attractive and varied as possible. We never show less than three cars—never


COST CARD

Repair Order No. Date 19

Name

Date	Rep. No.	Material	Quantity	COST Price	COST Amount

COST CARD

Repair Order No. Date 191

Name

Date	Rep. No.	Labor	Hrs.	COST Rate	COST Amount

Newman-Lane Shop Order System—When a repair job is completed and the repair cards are turned in, the record, plus the expense, is entered on this "Cost Card," of which these illustrations show the obverse and reverse sides.

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more than five. We do not believe in crowding. The arrangement of the cars is changed at least twice a week; that is, cars are shifted around, a roadster put in front; then a touring car of a different color, with top down, then say a car with top up, and so on. We stick to automobiles; we use no live, decorative plants to collect bugs, dust and cobwebs, and it is wonderful what a variety of displays we get. When a holiday season is on we decorate the cars with plumes, etc. We take advantage of the season in our own way, just as does the window trimmer of high class dry goods stores."

Good Lighting Effects Essential.

"We studied the lighting question till we arrived at a highly satisfactory result. We use individual tungsten lights suspended a few feet from the ceiling for overhead effect, and we use the long narrow bulbs below the window sill, to throw the light from the ground up. These lights are concealed in a dark metal reflector and give the same lighting effect as the footlights on the stage.

"At night our windows are kept brilliantly lighted till 12 o'clock, when they are automatically cut off. This enables us to catch the after theatre crowds hurrying home in automobiles and street cars. The rest of the block is dark, so our bright lights focalize attention. And we think that this night display is one of our most effective results. People tell us about it. Pedestrians pause to look at the bright, cheerful, refreshing display. They not only see it but talk about it, and many of these lookers become buyers.

Light, Cleanliness, Variety Most Important Points.

"What do I consider the most important points in window display?" repeated Mr. Reason. "I should say first light; study the lighting problem and get a good light if possible day and night. Next cleanliness. That is, keep the windows scrupulously clean, and the floor spotless. We pay a window washing concern $1.50 a week to wash our windows once a week and in stormy seasons it is done oftener. We used to have the porter or washer do it, but it always was being neglected. Now we always can depend upon having our windows washed, and properly washed, too, sharp on time every week.

Where cars are in operation the vapors gather on the windows and form a haze—and even though doors between showroom and garage are kept shut we get a little of it. But, some of the windows of automobile show rooms on this very street can hardly be seen through. Lastly, I believe in continuous changing of displays; our cars move out—we sell from our window display, which is also our show room."

Garage Section Stores 35 Cars.

This same idea of neatness and cleanliness and order extends to the Cartercar garage section, where 35 cars are stored every night, and it is highly impressive—floors are kept free from grease and dirt. A uniform rental of $10 a month is charged for storage space. A tariff of gasolene and oil prices is posted near the entrance door. Washing is priced $1, polish 50c. extra, etc. Charge for washing is increased to $2 if the car is extremely dirty.

Separate Repair Department.

"I am a firm believer in separating the repair department from the main garage," said Reason. "If possible, I would have it located in a separate building. As we are situated, that is out of the question, so as you see we have walled it off and all repair work is done behind closed doors. There is no one to interfere with our repair men, and they are not called upon to serve customers with gasolene, oil, etc., as in most other garages; you can readily imagine how much better results we get."

Every Repair Job Handled in Order—"Next."

"The most embarrassing feature of automobile repair work is that everybody wants their work done right away—they can't wait—can't go without their car. This used to jumble up the shop so badly that we not only lost money in that department but we couldn't do the work as well as we wanted to. We thought it over and resolved to adopt the 'barber shop' system and stick to it. When a man goes into a barber shop and all chairs are occupied, he awaits his turn; and when a customer brings his car in we tell him when we can take care of his work, and he can either bring it back or leave it. The rule is that work on hand must be done first. It was hard at the beginning, but a few words explaining why the system was necessary and how it worked to the good of all, leaves a pleasant taste in the customer's mind and lets him see that we are running our business on a business basis that is best for all concerned."

Sold 200 Cars in 1912 Season.

George Reason is practical in his methods. He has certain ideals of clean-cut business that are carried out every day. That his methods are successful is evidenced by the sale of 200 cars between July 31st, 1911, and July 31st, 1912. His territory consists of Detroit and five adjacent counties. His customers appreciate and speak of his frankness, his simple integrity. They swear by him. They tell their friends about the businesslike way in which things are done, and his business is growing.

Service Binds Your Customer to You.

He sticks by the garage and personally inspects every new car that goes out. He is always on the job—and when you want something done he is there to do it. He believes in advertising and advertises. He is a careful but judicious buyer of space. There is nothing about his methods that can't be duplicated by any dealer. His show room is not extravagant, but has been carefully studied out—and everything is clean and in good taste. It is a genuine treat for anyone who is interested to visit his store.

Gasolene Sales That Promote Can-Openers.

Whatever may be the disadvantage of purchasing "petrol" in two-gallon cans, the system has at least one noteworthy advantage in that it provides a simple and sure method of carrying a spare supply of fuel for use in case of emergency. It is in England that the practice of supplying fuel in sealed tins prevails, and a branch of the accessory business that has reached to no inconsiderable proportions revolves around the sale of can-holders and can-openers. There are several makes of combined can-holders and openers on the market, and the list of such devices constantly is being added to. It is a fairly general practice when starting on an extended journey to fill the gasolene tank and then to carry one of more extra tins of fuel in a patent holder on the running board.

Where Not to Use Cotton Waste.

Cotton waste is rather a dangerous material to use in cleaning certain parts of a gasolene motor, for the reason that threads and scraps are apt to become detached and lodge, unseen, in places where they can cause trouble. Wiping off the exterior of the motor with waste is quite safe, for little or no harm can result even if bits of the material come off; but for the inside of the crankcase, or any place where there are small oil or gasolene passages, a piece of cloth should be employed in preference to waste.

Evidence That Exhaust Gas Is Hot.

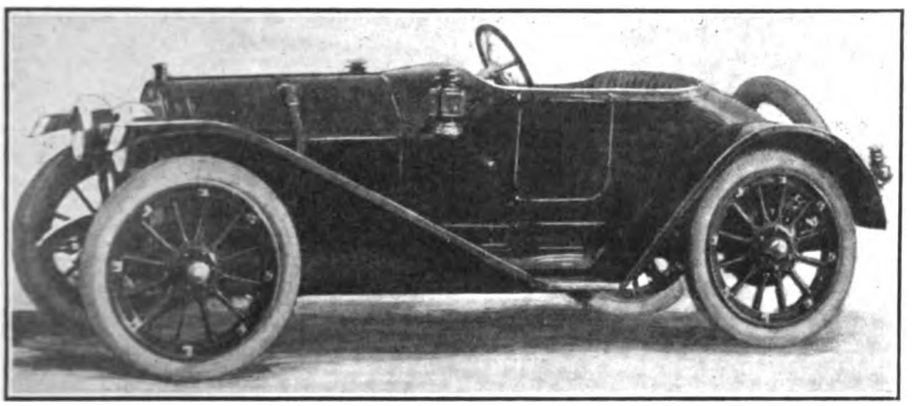
A good idea of the torridity of the exhaust coming from a gasolene motor is given by the fact that a valve chamber cap, from which the gasket was blown out, was packed with thin sheet lead in the hope that it would last for half a mile or so, and the lead blew out in a spray of melted metal before the motor had made half a hundred revolutions.

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CLEVER COMBINATION BODY ADDED TO KLINE LINE

Coupe-Roadster, Built to Order Heretofore, Now Stock Model—Dynamo Electric Lighting System and Mechanical Starters.

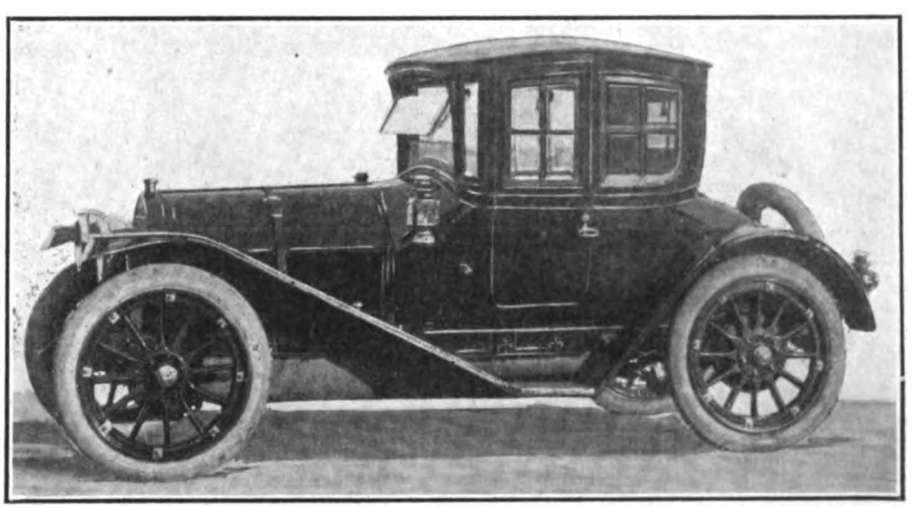
Four distinct chassis models, as heretofore, will constitute the line of the Kline Motor Car Corporation, of York, Pa., and Richmond, Va., and though bearing marked resemblance to their immediate predecessors in the concrete, they exhibit many specific betterments calculated in particular to increase the comfort of passengers. One new body style, brought out late last year, has been added to the line—it is a clever combination or convertible coupe-roadster which almost in the twinkling of an eye may be either one or the other, and be an uncommonly good-looking creation in either form—and on all four models, the "4-30," the "4-40," the "6-50" and the "6-60," a complete electric lighting system has been added and assumes the importance in the matter of added equipment which so many other manufacturers are according it.



KLINE COMBINATION COUPE-ROADSTER WITH TOP REMOVED

All of the cars, including the "4-30," which is the "baby" of the line, are started from the driver's seat as a matter of course. On the three larger models, and on the "4-30," which sells for $1,850, an Ever Ready mechanical starter forms a part of the standard equipment. On the "4-30" model, which sells for $1,750, option is given on either the Ever Ready starter, which, if chosen, increases the price a little, or the Prest-O-Lite acetylene starter, which is furnished without extra cost. In common with so many other well-known brands of cars, Kline cars no longer will be distinguished as yearly models, but instead will bear a simple series letter; the present line is designated series "A."

In designing the combination coupe-roadster, it has been the object of the manufacturers to evolve a type of body which can be used with equal comfort for both summer and winter touring, and to this end the top portion of the body is made readily detachable. Seven bolts hold it in place, and despite the fact that it may be removed in scarcely more than 10 minutes, leaving an attractive high-sided open roadster, the construction is such that the dividing line is practically indiscernible and the whole, when securely fastened together, is rattle-proof. With the top in place—it has been made four inches longer than in the original plans in order to afford more room for the occupants—the car affords comforts for winter or wet weather touring that cannot be obtained otherwise. One of the noteworthy features is that the back of the seat is arranged to move forward, revealing a large locker, which may be utilized for the storage of luggage. Needless to add, equipment is complete and includes a large electric dome light, cigar lighter and the other fixtures which generally find place in a limousine body. Owing to the construction, only finished parts are exposed when the coupe top is removed, the metal being nickel plated and the lamps and other metal work which is not finished bright being black enameled. The combination body is supplied on either of the three larger chassis.



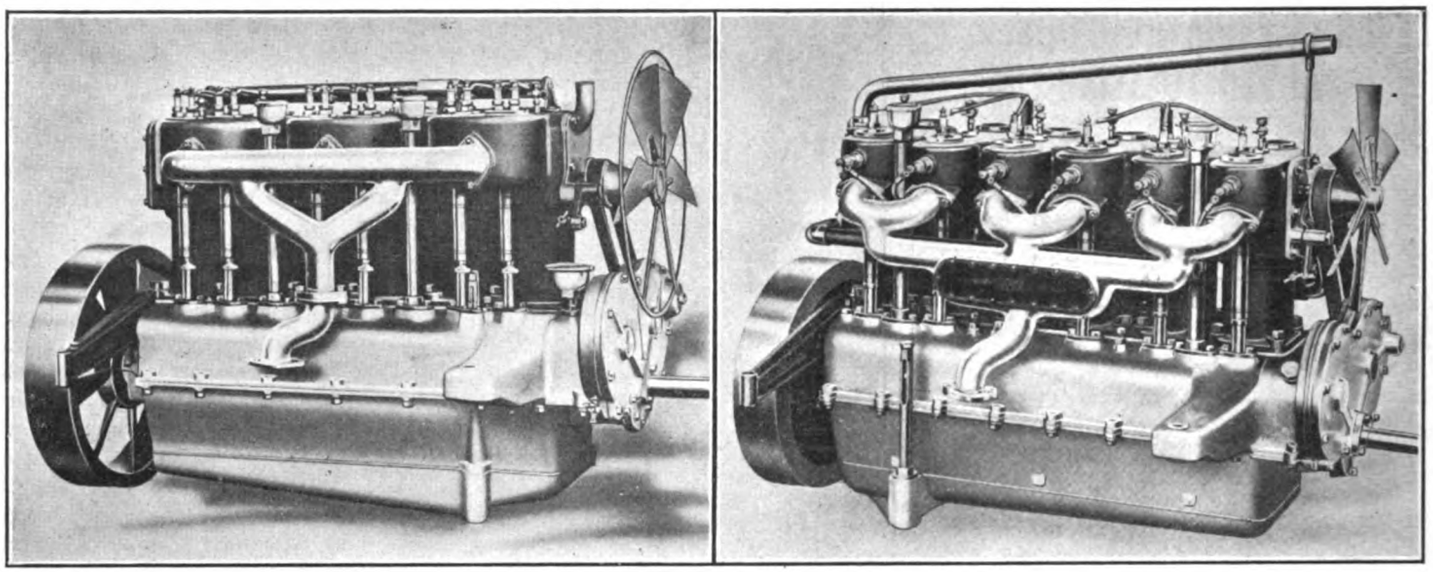
WITH THE TOP IN PLACE, SHOWING ENCLOSED CONSTRUCTION

As regards the mechanical construction of the four models in the line, little or no alteration worthy of note has been made. Such changes as have been made have to do chiefly with the equipment, which, as already noted, has been amplified by the addition of a complete Rushmore electric lighting system. The lamp equipment which goes with the system is a little more complete than is general, the principal difference lying in the adoption of 25 candle-power head lamps instead of the lower power lamps which generally are used. The side lamps are set in flush with the dash, lending an air of smoothness to the exterior, which is otherwise unencumbered with obstructions. A dash lamp to illuminate the gauges and dash fixtures is included.

By way of obtaining the easiest possible riding, the seat cushions have been increased in depth to 10 inches and the back cushions are fitted with what are styled Turkish springs. Another feature which adds to the easy riding qualities of the cars lies in the adoption of supplementary shock absorbing springs which come into action when the car is loaded to its capacity. Ordinarily, the usual spring suspension, which is the same in all models and embraces semi-elliptic members in front and three-quarter elliptic members in the rear, provides smooth riding when a light load is carried, the auxiliary devices coming into play when an exceptionally rough piece of road is encountered or the full complement of passengers is carried.

Except for a difference in the size of chassis parts commensurate with the difference in power of the engines, the four chassis in the line are very nearly alike, the cardinal features being the same in all. In the "4-30" model, which, as its name

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INTAKE SIDES OF KLINE "6-60" AND "6-50" MOTORS, SHOWING MANIFOLD CONSTRUCTION

signifies, is rated at 30 horsepower, the engine cylinders are cast separately, the bore and stroke being 4 inches and 4⅝ inches, respectively. The motors in the other three models all have their cylinders cast in pairs, the pairs in each case being securely bolted to the crankcase in such a manner that a virtual block construction is obtained. The construction has the advantage, however, that with the pairs slightly separated room is provided for main bearings between the cylinders. All three of the motors are of the T-head type, with carefully enclosed and interchangeable valves. In the "4-40" and the "6-60" engines, the bore and stroke are the same, namely, 4¼ x 5½ inches, the ratio therefore being such as to leave little doubt regarding aptness of the designation long-stroke In the "6-50" engine the bore and stroke are 4 5/32 and 5 inches, respectively, and except for these differences in dimensions the engines are practically identical in design and construction. In each case, cooling is by water, circulated by pump, and ignition is effected by means of a high tension magneto with a separate battery system for use in starting and in case of emergency. The lubrication system is entirely automatic in action, and is of the constant level force feed type in which the oil is forced from a crankcase compartment through a sight feed glass on the dash and thence into troughs beneath the connecting rod big end bearings.

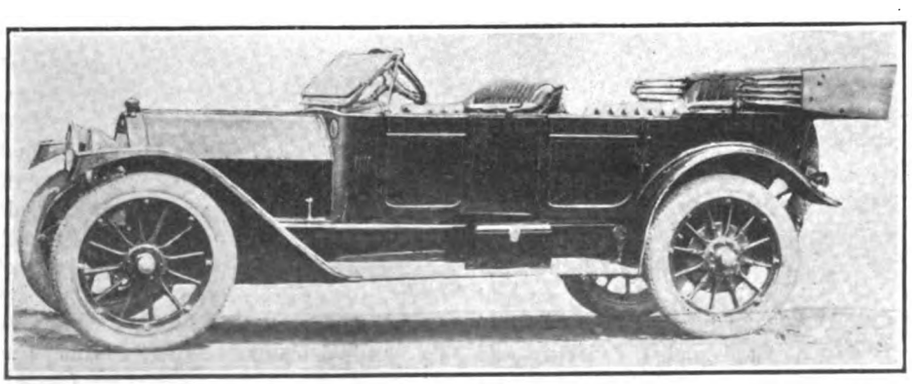
The slight changes which have been made in the engine design, and which are concerned chiefly with a smoothing down and a general refinement which scarcely is noticeable, are seven slighter in the case of the transmission elements. As heretofore, the clutches remain of the cone variety, in which a liberal number of cork inserts ensures against slipping and at the same time makes for smooth action. The change gear mechanism in each case, even to the smallest car in the line, provides four speeds forward and reverse, direct drive being the third speed and the fourth speed being an overstep. A slight change has been made in the method of treating the gears, which now are constructed of a special alloy steel and carefully heat treated. The same treatment applies also to the transmission shafts.

Coincident with the adoption of new body styles which provide considerably more room and a great deal more comfort, the wheelbases of two of the models, the "4-30" and the "6-60," have been increased, the "4-30" from 114 inches to 115 inches and the "6-60" from 130 to 132 inches. Similarly, the tires of the largest model have been altered from 38 x 4½ to 37 x 5, both front and rear. The tire sizes of the other three models, the "4-30," the "4-40" and the "6-50" are 34 x 4, 36 x 4 and 36 x 4½, respectively, the same size being used both front and rear. All are mounted on Firestone quick-detachable-demountable rims.

The largest car in the line is furnished in three body styles, the price, which is $3,500, being the same for either type of body, viz., four, six or seven-passenger The price covers complete equipment, as a matter of course, and includes semi-Duquesne silk mohair top with side curtains and dust hood, adjustable glass windshield, improved tire irons, demountable rims, Rushmore electric lighting system with a full complement of lamps, Ever Ready mechanical starter, speedometer, foot and robe rails and the usual assortment of tools, spare parts, etc.

The "6-50" model, which lists at $2,850, is equipped with four-passenger, small tonneau and five-passenger touring bodies, the price including the same equipment as is listed for the larger model. Both the "4-30" and the "4-40" are furnished as two- four and five-passenger cars, the former listing at $1,850, with the Ever Ready starter, and $1,750 with the Prest-O-Lite starter, and the latter listing at $2,600, the equipment being the same in both cases and similar to that listed for the larger models.

In addition to the models already listed, there are two others which are styled "Meteor," and are designed, as their name indicates, primarily as speed creations. By reason of a slightly higher gear ratio and generally lighter body construction, only two seats being provided, either is capable of speeds up to 70 miles an hour. The Meteor is supplied in both the "6-50" and the "6-60" models, the former listing at $2,800 and the latter at $3,200.



SIDE VIEW OF KLINE 6-CYLINDER 60-HORSEPOWER TOURING MODEL

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TRANSFORMING A $50,000 LOSS INTO A SNUG PROFIT

Being the True Story of a Man Who Took Over a Business That Was Losing Money and Who by Injecting New Methods Placed It on Its Feet and Made It Pay—The Used Car as One of the Stumbling Blocks That Postpones Success—Fallacy of the False Sales Sheet.

Converting losses into profits is one of the most difficult tasks to which man can be set, or to which he can set himself; failure is more often his portion than is success. When he succeeds, he deserves all the glory and profit that may come to him, and the methods by which he achieves success become in the nature of instruction which is almost beyond value.

In the automobile trade, as in all other trades, there have been men who surmounted the difficult task. One of them who only recently attained that great glory is located in a city of considerable proportions in which the sale of automobiles is extensive but widely distributed. When the opportunity presented itself, and though the business in question—a business which is really retail but which includes a restricted circle of suburban territory—he grasped it, despite the fact that the former owner already had lost $50,000 in the venture and was adding to the loss each day. The car which he represented is well known and well established, and has enjoyed profitable sale over a considerable period of years.

Retrieving the Loss a Stern Task.

As the magnitude of the loss indicates, the rebuilding of the business and the task of converting the loss into a profit was a stern one, and, though successfully accomplished, the dealer who performed the achievement is in no wise boastful. When the Motor World sought him out he was loath to talk, not that he was averse to disclosing his methods, but because he appeared to think that he had accomplished nothing particularly wonderful. When pressed, however, his tongue loosened and he told a story which cannot fail to convey instruction to all who are not above desiring it.

For obvious reasons, his name, and the name of his predecessor, cannot be given. For the purpose of this narrative, he shall be known as Taylor and his predecessor as Martin, neither of which, however, are even mildly suggestive of their correct cognomens.

"Possibly my faith in the car has something to do with why I have been able to sell them," said Taylor when he was induced to talk of his achievement, "but, anyhow, suffice it to say they are selling now in my town; and since I am running the business I naturally feel inclined to take some credit. Before I ran this business there were cars sold here, but regardless of sales or anything else the business failed to pay. Why it didn't and why it does now are things I will explain.

Common Sense the Real Factor.

"Of course the real reason at the bottom of the whole thing is business sense; which is more or less of the common or garden variety. The business was established in this town some years ago by the manufacturer of the cars, who wished to make an energetic invasion of this field, and who believed that once firmly established the trade here would be a fine fat link in his selling agencies throughout the country. As a starter he did what may or may not have been the right thing. He wanted to make a respectable front, so instead of picking out a man who would put his own money into the thing and risk all responsibility for profit or loss, the manufacturer kept a couple of strings on the business. Every manufacturer who has out and out dealers has strings on the business, in that if the dealer doesn't suit he can be cut off; that clause goes in many contracts. But this manufacturer sort of stood back of the business and got a man to run it as a kind of a half dealer. The manufacturer told the agent that he would help him push the line, and that he would stand back of him financially to a certain extent. It looked good to the agent, because he saw less of a chance to lose than if he set up for himself and assumed all responsibility.

Lack of Effort Retarded Business.

"Well, things started. A good location was secured on a prominent street in 'automobile row' and the agency opened up. Things went fair for a time, and the agent should have made money. The main thing that ailed him was that he did not have to dig as hard as he might have. He knew he did not stand to lose heavily if sales did not come so very fast, and he had a much different feeling than he would have had had he been working out and out for himself. Hard work and the right kind at the start ought to have laid a foundation for the future. One trouble was the agent, who liked to consider himself the head of a business and to play the peacock at times; he put too much gravel and too little cement in his cellar wall; therefore he never was able to build a very big house.

No Profit in Paper Sales.

"What any sensible man should avoid was one of the inexplicable things this man did; he tried to make a good looking sales sheet when there was not enough to back it up. He wanted to send records to the factory showing the number of cars he had placed in his territory and to make it appear that his establishment was getting rid of its allotment. One way he did this was by responding to the head office's cry to establish sub-agencies. The agent did establish sub-agencies. He went out into the suburbs and in some cases not far from the center of the territory he should have covered himself and placed what he was pleased to call sub-agents—'curbstone agents.'

Appointment of Worthless Sub-Agents.

"They were nothing more or less than men who lived in certain localities and who promised to try to sell cars for the agent; the agreement was, of course, that they must purchase a demonstrator. The result—these sub-agents, some dozen or fifteen in number—bought cars at a discount of some 15 per cent. and then proceeded to forget all about their being sub-agents. They got what they wanted—a car at a cut price. And every one of these men, who wanted a car so badly, should have been placed on the prospect list at the very beginning and made to buy a car at the regular list price. The figures showed that the agent, whom we will call Martin, was placing a lot of cars. Shipments were going to him regularly, but when it came to figuring up the profits, things didn't fit. The factory, which figured that it ought to make a profit over and above the cost of production, and thereby fixed a certain price for dealers, was getting paid all right, but the agent was losing; and what he lost was partly a factory loss, so it all worked out the same as if the manufacturer had cut the price in the beginning.

"Then there was another item of loss.

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Almost anyone who is asked to name the possible losses in the automobile business can guess it; it is used cars. It is some problem, but so far as I myself am concerned, I have put it on what I think is a business basis. I am not writing for a prize, but I believe the work the Motor World is doing in seeking the best method of dealing with the problem is a meritorious task, and I believe that through such co-operation the question is going to be answered for every dealer, large and small.

Meeting the Used Car Problem.

"The man before me, Martin, was anxious to make sales. A great many of the people who were prospects had cars already, so in order to get them to buy he had to take their cars in trade. In the early days of the business, prices and profits were such that a dealer could give a good price for a used car and make money, but with things as they are today the trade is on too much of a businesslike basis to permit such methods; they are entirely impracticable. Martin used to take a car in trade and allow a price for it that he ought to have known he never could get for it, even if he spent considerable time repairing and overhauling it. The result was that before long he had an elegant stock of used cars which he entered into his inventory at the prices he paid for them. This made the sales sheet balance and look good, but anyone can see that some day there had to be a big drop for someone.

Complaining Instead of Selling.

"There were other minor matters about Martin of which I do not approve. To begin with, I do not consider him a high class salesman or man of executive ability. He used to find fault with the advertising the factory did, and complained that it did not help him sell cars. While he was kicking, if he had paid a little more attention to window display and such matters, and had buckled down a little closer, he might have made up for whatever inferiority there was in the advertising—provided there was any; for I never noticed anything lacking.

Good Salesmen an Asset.

"Also, Martin felt that he should be the best salesman in the place; he didn't like to have a salesman who was better than himself. You can imagine the kind of a staff he had. He hated to lose his dignity by having anyone make more sales than he made. He lost sight of the fact that the man who climbs the highest does it upon the shoulders—not the souls—of other men; he is the man who can boss. The result of this management was that in the last year of Martin's reign the establishment went close to $50,000 in the hole. It wasn't quite that, but it was enough to make any man, no matter how big his business is, sit up and take notice.

"Along about this time I appear upon the stage, entering from the left rear and marching right down toward the footlights. I had been selling cars for some time, and one day the manufacturer said to me, 'Taylor, do you want to go out to so and so and be a dealer?' It didn't take me long to decide that; I did, so I went and am here yet.

"One of the first things I insisted on was that I be given a start with a clean sheet; I refused to accept the glorious array of old cars that Martin had stocked up for me, and the factory agreed to take them and dispose of them. Then I was let pretty much alone. The manufacturer practically presented me with the business on the chance that I would pull it out of the hole, and if I could I was to have it and pay for it with the profits. I am now paying for the business and already regard it as mine.

Business on a Business Basis.

"When I arrived and was enthroned as head of the establishment, I at once began to browse around and get the lay of things. Then I merely started out to sell cars on a businesslike basis. I quickly ran against the used car proposition at the very start. A man who already had one of our cars wanted a new one and wanted me to take the old one in trade. But the price he wanted was away beyond reason. I told him it was, but he couldn't see it; he had been educated to believe that big allowances for used cars were the proper thing, and he was a little inclined to be nasty about it. There was only one thing to do. I could have thrown away a lot of my profits and made a sale, but sales with no profits are bad business. I reasoned with the man and told him what I could pay for the old car. He went home and kept calling me up for two or three days. Then we made a deal. I named a price that I thought I could get for the old car, and agreed to take it in trade on the condition that for every dollar the old car sold for below the allowed price, he was to stand half the loss and I half, and if I got more he was to get all above.

Safe and Sane Trading Methods.

"He couldn't kick on that, when he saw the fairness of it; the result was that I cleaned the car and sold it for a slight profit over the allowance and told him to come in and get the money. I might have been obliged to lose a little, but with the safe and sane estimate I made as to what the car ought to bring I felt that I could afford to make the sale; had I lost at all, it would not have been enough to seriously affect my commission. Another method I often endeavor to employ when the owner will consent to it, is to take his car into the salesroom and sell it for the most we can get for it. I show him that whereas a broker would charge him 5 per cent. or more to dispose of the car, we will donate the services of our sales force free of charge, and we generally manage to get reasonable prices for the used cars. That stops the leaks through used cars.

Solving the Sub-Agent Problem.

"About those sub-agents; the manufacturer asked me one day why I didn't have as many as Martin used to have, and right then and there I told him the kind of subs Martin had placed. Not one of them ever sold a car, and they were just so much deadwood in the territory. The manufacturer waked up when I made my little speech; I also told him that inasmuch as the responsibility for the success of the business was on my shoulders I thought I ought to have my own way. He agreed with me. Any man now who wants to be a sub-agent has to show me that he is out to sell cars.

Hired a Really Efficient Salesman.

"When I arrived on the scene we had two or three mediocre salesmen, but I was better than any of them. I knew it and they knew it, and therefore none of them felt that he ought to sell as many cars as myself. I hadn't been here long before I began to look for a better salesman than I am. When I found the man I wanted I hired him. I consider him an added profit rather than an expense, because he has more than paid his salary since he has been here. With a better sales force under me I am now able to devote more of my time to executive matters, and have worked out one or two little schemes of selling that have been of considerable value.

Turned a Loss Into a Profit.

"At the outset the one thing I wanted to do was to make the business not lose money; not to make it pay big profits, but just to keep it from losing money. It was some job, but by hard work I did it. Now it is beginning to pay profits, and before long it will be paying the rate of income it should. Of course, when I started I planned to pay myself a salary. This is what any man should do, because if a man puts his services into a business instead of hiring a manager, he is entitled to the salary the manager would get; profits should not be counted until all these expenses are paid. I'm not bragging about these profits yet, because they are not startling; what pleases me is that I am not losing money."

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RESOURCEFULNESS IN THE REPAIR SHOP; AN INSTANCE

How an Intelligent Repair Man Used His Wits and Made a Broken Axle Almost as Good as New—Combination of Steel Plates and Hot Riveting That Was Strengthened by Cleverly Taking Advantage of the Contraction of Cooling Metal—Details of the Job.

There are many ways in which the motor car repairman who uses his brains can bring to his aid natural forces that will greatly help him in producing good work—work that will stand up for a long time, and tell its own story of thoroughness, sensible planning and workmanlike execution.

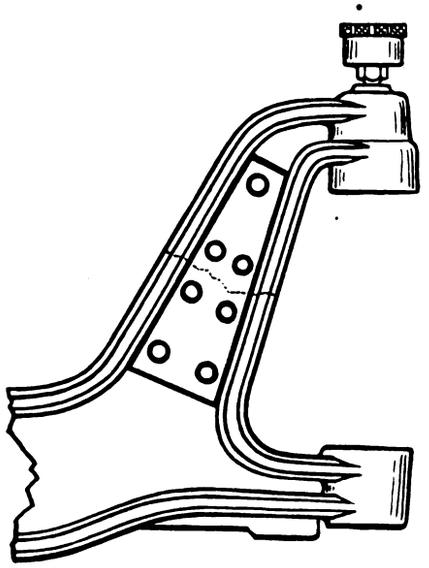
Making Use of Natural Forces.

There are some things that can be done much better with the aid of natural phenomena than by purely artificial methods. For instance, there is the familiar process of securing steel tires to wheels by shrinkage; the tire is made just the right fraction of an inch smaller than the wheel rim and then is heated, which causes sufficient expansion to permit the tire to be slipped on the rim. The rest is done naturally. The metal shrinks, as it cools, to its original dimensions, and in so doing compresses and binds the wheel together with a force that cannot be duplicated by any artificial process. Perhaps the very height of the shrinking process is reached in applying the jackets or "hoops" to big guns, a process without which the enormous ordnance now turned out could not well be constructed.

A Problem Presents Itself.

The shrinkage of metal can be taken advantage of by repair men in various ways, and it is by no means impossible to make use of this tremendous force in work which does not involve the use of such forms as rings or tubes; of course a flat piece of metal will expand and shrink, and it was by taking advantage of this fact that the repair job shown in the accompanying illustration was performed, and it was due very largely to the fact that advantage was taken of the shrinkage principle that the results obtained were so satisfactory.

One day a touring car, dusty from many miles on the road, drew up in front of a garage, after approaching so slowly and gingerly that the halt necessitated no application of the brakes. Inquiry elicited the fact that the garage possessed facilities for doing repair work, and the boss repairman was shown the damaged part. There was a crack in the upper jaw of the fork of the front axle on the left side, and it extended nearly through the forging—so nearly through, in fact, that the remaining shreds of steel parted when the car was slightly jolted in going up the incline into the shop. It was a disagreeable looking job. Welding was out of the question, because of the absence of either electric or oxy-acetylene apparatus for the purpose. The foreman, however, seemed quite undaunted, and did his thinking while the axle was being removed from the car, and the steering pivots and everything else that was loose taken off and, incidentally, carefully cleaned and put where they could be found again.



INGENIOUS STEERING KNUCKLE REPAIR

Commencement of Repair Operation.

The first process was to make two patches of mild steel, each three-eighths of an inch thick, to fit in the channels of the broken fork jaw, which was of the usual I-beam cross section. The patches were carefully fitted, one on each side, while the broken member was temporarily clamped together, and were bedded down so that when fastened in place they would have no tendency to twist or distort the fork. The ends were tapered off in order to give the job as neat an appearance as possible, though such work of necessity cannot be hidden or disguised. Seven holes were drilled in each patch, four below the line of fracture and three above, the narrow end permitting only three holes. Much care was exercised to bring the holes in both plates in exactly the same relative positions. The four holes in the wide ends were drilled while the patches were in position on the axle, the drill passing through both patches and the web of the fork at the same time. Then the plates were removed and fastened together with two short bolts which fitted closely in two of the holes, and then the three holes in the narrow ends were drilled through both plates at the same time. In this way there could be no doubt as to the holes coming exactly opposite.

What the Foreman Did Himself.

The next stage of the job was to hot-rivet the patches to the lower part of the fork, which was done with rivets which fitted the holes tightly, the result being an extremely solid piece of work. At this point the foreman, who had kept his modus operandi pretty much to himself, began to do things in a way that was rather peculiar, and he did the work all himself, too; evidently he was very particular about it. The broken-off fork arm was inserted between the projecting patches, where it fitted perfectly, and was gently tapped into place until the crack was closed up and its presence was betrayed only by the jagged lines that appeared in the flanges where they showed on each side of the patches.

Accuracy in Laying Out the Job.

Then, with a "scriber," which is a slender, sharp pointed steel tool used for scratching on metals, the locations of the holes in the narrow ends of the patches were transferred to the web of the fork, which had not been drilled. With a small, sharp pair of dividers, the centers of the circles were located and marked. But these centers were not used in drilling. The foreman marked the points where the drill was to enter a trifle higher up—further from the point of fracture—than the true centers of the scribed circles; the single hole near the end was set off more than the two nearer the crack. The holes then were drilled, and when the parts were brought together again it was found that the holes were just far enough "off" so that the closely-fitting rivets would not go through. Those who knew the boss waited to see what he would do, and only those who had

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no. had an opportunity to see him tackle a difficult piece of work thought he had made a mistake.

Doing the Crucial Part of the Work.

No one was left in doubt very long. The work that followed required quick and accurate action and no false moves, so explanations were forthcoming. The big gas blow-pipe was set to work heating the two projecting ends of the patch plates, the broken fork arm having been removed from between them. A bunch of waste, wrapped around the metal at the point where the riveting already had been done, was kept wet by the constant application of water, so that very little heat spread along the forging. When the patches began to show signs of getting hot rivets with slightly tapered ends to permit easy insertion, were put in the forge, and by the time the patches were heated to a rather dull red the rivets were just at the right temperature to cause the boy who was heating them to raise the orthodox cry "Hot!" The axle end was laid on the anvil and the broken piece slipped into place, after a hasty but careful brushing off to make sure that there was nothing to prevent the proper closing of the fracture. And to the surprise of the inexperienced, the rivets, which before had refused to enter the holes, were tapped into place without much difficulty and were headed over firmly and well long before the patches were cold. After the riveting had been completed, the metal was allowed to cool gradually, the scale was rubbed off and a little touching up done with a file, and the work was done, all except putting back the parts on the car.

Expounding the Principles Involved.

The secret of the job was that the expansion of the steel plates, when heated, brought the holes in them directly into line with the holes in the web of the fork arm, so that the rivets could be forced in. As the metal cooled, however, it contracted to its original dimensions, and in so doing brought the two broken pieces together with great pressure, binding the whole job with a solidity that could hardly have been secured in any other way. Of course the work called for the exercise of no little judgment, for the amount of expansion and contraction was very small, and in order to take advantage of it all the marking-out had to be done with great accuracy and with a knowledge of the amount of expansion if the steel under heat; moreover, the hole near the end of the patch would be displaced by expansion to a greater extent than the two holes nearer the middle, because there would be a greater expansion due to the greater length of metal, and this also had to be considered. That the method is a practical one, however, is proved by the fact that the repair, which was intended only as a temporary expedient to last until a new axle could be procured, was so successful that the car was run for more than a year before the new axle was put in, and even then it was done more as a precaution than anything else, in order to prepare the machine for a rather strenuous tour.

Simple Means of Locating Engine Noises.

Despite their availability, those instruments akin to stethoscopes which are designed to assist in the location of knocks and other abnormal engine noises, rarely



METAL PIPE AS A STETHOSCOPE

are to be found in automobile repair shops. When anything of the sort is employed, it usually is a bicycle spoke, or other stiff metal rod, or even a slender wooden stick, held with one end against the source of sound and the other against the teeth of the "listener," which rude tool transmits sound vibrations in a manner quite surprising to one who never has tried the experiment. In at least one New York shop, however, there is utilized an even simpler and more effective "instrument." It consists of nothing more than a piece of metal pipe, one end of which is placed against the motor nearest to the suspected points of noise, the other near the ear, as shown by the accompanying illustration. The hollow pipe makes a better conductor of sound vibrations and the hand and thumb complete the "circuit." It has been found a remarkably efficient means of locating internal motor troubles.

Rubber Elasticity vs. Compressibility.

It seems hard to realize that rubber, which can be squeezed or stretched out of shape with the bare fingers, is practically incompressible; but it is true. It is elastic, not compressible. If a depression is made in a piece of rubber by applying pressure to its surface, a volume of rubber exactly equal to the volume of the depression will be raised, just as dipping the hand in water will displace a volume of liquid equal to the immersed volume of the hand. Confine rubber, however, so that displacement is impossible, and the familiar softness will disappear. This is the reason why solid rubber tires are made with as small a quantity of rubber as possible confined between the flanges, for this rubber has little cushioning effect, only the rubber which is free to expand being of any use for absorbing vibration.

Abuse That Shortens Life of Tops.

Just because the average automobile top provides a comparatively safe and convenient repository for small packages, hats and even tools, is no reason why it should be used for that purpose. Tops, as a rule, are treated to great indignities in this respect, and it scarcely is to be wondered that they show signs of wear long before their ordinary period of usefulness is over. When they are not in use they should be folded carefully, and, incidentally, it is well to raise them after a shower and let them dry in order to prevent them taking on a "set."

Strainers That Require Regular Attention.

In cars using exhaust gas pressure for the gasolene feed the strainers or other cleaners through which the gas passes on its way to the tank should be inspected and cleaned every two or three weeks, if the car is given an average amount of use. If the car is used a great deal, or if the motor is using an excess of lubricating oil or gasolene, the deposit in the strainer will be heavier and should be removed more frequently.

About Fitting Keys in Keyways.

In fitting a key in a keyway it should be borne in mind that nothing is gained by making a very tight fit at the top and bottom of the key. The strain all comes on the sides of the key and keyways, and if the key is fitted very tightly top and bottom the tendency will be to force one side of the hub bore away from the shaft, and, if the hub be of cast iron and not too strong, it is entirely possible to split it by a too tightly fitting key.

Wire Terminals That Give Satisfaction.

It is far better to use metal terminals on battery wires than to merely wind the bared wire ends around the binding posts; the special terminals hold better, look better and give better contact. If no terminals are used, however, the wire should be passed around the post so that the tightening of the binding nut will tend to wrap it more closely rather than unwind it.

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KEEPING UNNEEDED OBJECTS OUT OF SALESROOMS

Things That Are of No Service and That by Distracting the Prospective Buyer's Attention from the Cars May Lose a Sale—Dealer Reilly Arouses His Head Salesman by Display of a Freak Wheel—Making the Car the Real Center of Interest.

"Automobile Row" in its holiday clothes was gay and enterprising in appearance; strips of bunting and streamers bearing the names of a multitude of cars supplemented the electrical display which transformed the "row" into an avenue of light after darkness fell, and there was every indication of something unusual in the air as Reilly and the Sales Manager in one of the factory's brightest and newest models glided down the street toward Reilly's salesrooms. From every hand came cheerful greetings which were all in accord with the spirit that seemed to emanate from the crisp autumn atmosphere.

Dealers' Fall Show Milliners' Rival.

As a matter of fact, there were "doings" in town; it was the dealers' annual fall opening, and no milliner or modiste ever put more vim into her layout of wares than did the association of automobile dealers, which every fall started the wheel of business rolling with a concerted boost. Every dealer tried his utmost to have the most attractive place on the "row," which accounts for Reilly's immigration with the Sales Manager and the bright new model.

This dealer, whose diminutive stature was all out of proportion to his energy, was determined to make the best showing he could, and accordingly he had informed the factory Sales Manager that he had to have a new car for one of the salesroom windows; there was no yes or no about it, he had to have the car—and as usual he got it. Roads were hard and dry after a week of sunshine, so Reilly decided to save freight and time and drive the car the 30 miles from the factory to his place of business; the Sales Manager didn't mind a bit getting into the spirit of the fall opening and, although he tried to make Reilly think it was doing a favor, he consented to ride down in the new car and stay over night to see the parade—for who ever heard of a fall opening of automobiles without a parade?

Reilly Specializes in Decorations.

Reilly's salesrooms were almost aglow with decorations, and as the car rolled in through the doors, the Sales Manager had no difficulty in recognizing traces of the acumen which every year made a full sales sheet for the proprietor. As the car was sent to the washroom for a touching up, the Sales Manager, the dealer and the latter's salesman began a casual inspection of the premises, for much of the decorating had been done during the dealer's absence. The Sales Manager noted the study which evidently stood back of the ideal arrangement of things, and was watching the reflection of his feet in the finish on the side of a limousine.

"What's that?" he suddenly exclaimed, at the same time pointing to a queer looking object which stood against the rear wall of the room.

"Huh," grunted the salesman.

Reilly merely smiled.

The Sales Manager walked over to inspect it.

The Object That Attracted Attention.

The object in question might have appeared as one of several things to an uninitiated person. Exteriorly it was round and about its circumference was what looked like a tire, but, if it were intended to be an automobile wheel, it looked peculiar, indeed, for where spokes should have been was a nickel-plated sheet of metal which made the object look like a cross between a gunner's target and one of those old-fashioned shields which every boy knows used to be carried by the "knight of old" when he went into battle for his lady fair. The boy knows all about them, because he has seen hundreds of them in his picture books.

The Sales Manager looked it over wonderingly. "What is it?" he again asked.

"A wheel, of course," replied Reilly.

"I know, but what kind of a wheel?"

"A regular hoodoo wheel," volunteered the dealer's salesman. "That's about all it's good for so far as I have been able to see."

A Smile Causes a Lecture.

Reilly's smile seemed to arouse unpleasant remembrances in the mind of his employe, but since this particular employe and Reilly were on terms of companionship and were in the habit of speaking their minds to one another, Reilly proceeded to "get his" and in an emphatic manner.

"Yes! Smile!" said the salesman. "Some day that darned thing'll lose a sale. Then who'll smile? Who'll be to blame?"

"What's the matter with it?" asked the Sales Manager, anxious to make peace. "How will it lose a sale?"

Biggest Sale-Killer in the Store.

"Lose a sale?" responded the salesman. "Lose a sale? That thing is the biggest sale-killer I ever saw. I bet I've moved that thing back into the office fifty times if I've moved it once. If we're going to sell fool wheels like that, all right; but, if we're selling cars, for the love of Selden or Dyer or someone else, keep that thing out of sight."

"What harm does it do?" said the man from the factory.

"Harm? All kinds of harm," almost shouted Reilly's salesman. "I wish the fellow that brought it here had it around his neck. Some inventor had it made and brought it here for the boss to try out. It's got an airless tire and has no spokes, and the principal other feature is that it looks like the devil himself. The boss, of course, couldn't see any harm in taking the thing and giving it a tryout if he got a chance, so he lets the crank inventor leave it in this salesroom. He stood it up against the wall and it stayed there all one afternoon. The next morning I had a prospect coming in, so when I arrived in the morning I moved the damned thing back into the office and put it out of sight in a corner behind the desk.

How It Distracts Prospective Buyers.

"The next day I found it over on the other side of the salesroom and I moved it back again. Every time I move it back, it gets out some way. I suppose Reilly rolls it out here to look it over or for some other purpose, and then he forgets to roll it back. Why, just to show you the damage in that piece of junk! The other day it got out on me again when I wasn't watching, and one of my prospects came in to look at a car. He was coming along in fine shape and was getting so enthusiastic that I was thinking of giving him a chance to sign a contract when he catches sight of that hunk of armor plate over in the corner. 'What's that thing?' he asked, and he straightway forgot all about the car, and

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I had to go over with him and explain that the wheel was something new but that we didn't think much of it.

"Well—I finally got to talking about wheels in general, and then brought him back to the car to show him a point about our wheels, and finally I got him interested in the car again. O, of course, he finally bought a car, but maybe you don't think it took some funny work on my part! My heart dropped clear to my ankles when he spotted that wheel. I believe I'd have lost the sale if he hadn't been almost ready to buy when he came in. You can see how a think like that will impress a man, for when he was going out he walked over toward it and as he gave it a last look said, 'Gee, that sure's a funny looking thing.' I've been on the point of smashing it a dozen times, and——"

Admits the Salesman is Right.

Reilly's cheeks took on a tinge of rosiness at times as his salesman slandered the wheel, and now he interrupted and opened in his own defense.

"You're right," he said to the salesman; "I intended to take the wheel back every time I brought it out, but something came up each time and it must have slipped my mind. Anyhow, I'm going to send for that fellow and make him take it away. I don't want it around here; we can't use it."

"You can't get it away any too quick for me," replied Reilly's salesman.

Salesroom Void of Nonessentials.

"You see," continued Reilly, addressing the Sales Manager, "we make it a practice to keep out of the salesroom anything that may attract attention in the wrong direction, such as that wheel, for instance. It's true that when you have a man on the floor showing him a car he is more likely to pay attention to what you say and to get along toward the buying stage if he doesn't have anything to take his mind off what you are showing him. That's one reason our salesroom is kept so neatly. We keep it almost barren of objects except the cars, and if it wasn't neat and clean it would look like a barn and be unattractive. That red moulding and those potted plants in the corners add the necessary touch of cheerfulness.

Effect of Pictures in Salesrooms.

"When I first went into business I thought I ought to have my salesroom all trimmed up with pictures and such stuff, and if I could have gotten this wheel in those days it would have held a place of honor. I got over that, however. It took a little while for the idea to seep in under my scalp, but when it did I had one grand cleaning up. I eventually began to think that even the pictures on the wall were detracting the attentions of prospective buyers from the merits of the cars. Some of the pictures I moved into the office and two that showed cars finishing a race I moved into the windows. I put them at one side where they could be seen from the street. If anyone wants to see those particular photographs he has to get out in the street.

Window Good Place for Pictures.

"The pictures in the windows often cause a man to stop, and sometimes he gets interested in the cars in that way. If there is anything here that a man is likely to spot during a sales talk, and I feel that he is likely to buy at the end of the sales talk. I try to have him notice the thing and have it explained to him before I begin. I may be in the extreme in this thing, for some dealers like to have a few pictures of racing cars and such things on the salesroom walls, but I don't. I remodeled the salesrooms several years ago and had the walls finished up neatly but plainly and in such a way that I don't need to hang up pictures. When a man is on the floor here looking at a car, he has nothing else to distract him. The cars, also, are the center of attraction; in fact, there is not much else to see in the salesroom. What is a salesroom for if it isn't to show cars and, as my critical salesman said, if we're selling cars, let's get the rest of the stuff off the floor and out of sight.

Lights Burning When Store's Closed.

"We're a little over-decorated this week because of the fall opening. We've got more lights around than we have ordinarily. I don't mean to say that we have too many lights, but we have more of them now than the ordinary run of business would justify; the expense would be too heavy. But I'm a believer in light, and we keep several bulbs burning at night, but they merely illuminate the front of the salesroom and show up the cars. We have them turned off about the time the streets become deserted."

"See?" said the dealer's salesman, with a triumphant smile, "the boss admits I'm right for once."

"Did I ever say you were wrong?"

"Well, slowly responded the salesman, "I won't say that you said so in so many words."

"When did I ever indicate that you were wrong? Of course, you are a great many times," retorted Reilly.

"Do you two always scrap like this?" asked the Sales Manager, who had been an interested nonpartisan.

Both Reilly and his salesman were about to reply when the doors to the garage opened and the foreman directed the rolling in of the new model which, with every fleck of dust removed, glistened and shone as well as the day it left the paint shop at the factory.

Electric Association to Meet in Boston.

On Tuesday and Wednesday next, 8th and 9th insts., members of the Electric Vehicle Association of America will open their third annual convention in Boston, Mass., in connection with the electrical show which then will be in full sway in Mechanics' hall. The meetings, which will open at 10 o'clock in the morning, will be held in Paul Revere hall, Mechanics' building, and will be more or less professional sessions, at which a number of papers dealing with practically every angle of the electric vehicle situation will be read.

Among the papers are the following: Where We Stand Today, by C. E. Michel, of the Union Electric Light and Power Co., St. Louis, Mo.; Street and Traffic Conditions as Applied to the Use of Electric Vehicles, by R. McAllister Lloyd, of the International Motor Co., New York; The Publicity Campaign of the Electric Vehicle Association of America, by Frank W. Smith, of the United Electric Light and Power Co., New York; The West as a Field for Electric Vehicles, by Dr. M. Elkstromer, of the Denver Gas and Electric Light Co., Denver, Col.; Notes on the Cost of Motor Trucks, by Dr. Harold Pender and H. F. Thompson, of the Massachusetts Institute of Technology.

Other subjects to be dealt with are: Some Recent Developments in the Lead Battery, by Bruce Ford, of the Electric Storage Battery Co., Philadelphia, Pa.; Electric Vehicle Development in the East, by Stephen J. Thompson, of the Public Service Electric Co., Newark, N. J.; Electric Vehicle Charging Apparatus, by R. E. Russell, of the General Electric Co., Schenectady, N. Y.; Progress of Commercial Cars in America, with Special Reference to the Electric, by E. S. Foljambe, paper by the Westinghouse Co.; Insurance from the Standpoint of Electric Vehicles, by Carl H. Clark, of Field & Cowles, Boston, Mass.; The Edison Battery in Service, by H. H. Smith, of the Edison Storage Battery Co., Orange, N. J.; Electric Vehicle Service, by J. C. Ford, of the National Electric Lamp Association, Cleveland, Ohio.

When Hood Fasteners Are Advantageous.

There are good reasons for having good fasteners on motor hoods and for keeping them fastened. When a car is running at a fair speed the pressure of the air under the hood, due to the movement of the car, together with the action of the fan, while not sufficient to lift the hood, is sufficient to help it to rise when the car passes over a jolt in the road.

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PRINCIPLES THAT UNDERLIE LIGHTING SYSTEMS

The Dynamo Treated as a Unit and the Inherent Characteristics of the Several Types Explained in a Non-Technical Manner — Shunt Windings and Other Windings, Wherein They Differ and the Reasons for Their Uses — How Troubles May Be Remedied.

(This is the second of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render easier their care and repair by dealer and owner alike.)

To those who are habitual railroad travelers, the question often may have occurred: "Why all this fuss about the engineering difficulties attendant upon the development of electric automobile lighting systems, and why were they not long ago developed to the state of perfection of the railroad lighting system, with its unfailing mechanism and unfailing light?" The most cursory examination must serve to make plain the answer.

Railroad Car Not Like Automobile.

In the first place, the typical railroad train that is electrically lighted is the train de luxe. It is a heavy, ballasted, limited train that makes few stops and is operated at practically constant speed for long periods. It runs on a perfect roadbed from which all the jolts and jars and many of the grades and curves have been scientifically ironed. And last, but not least, weight is no object. In fact, Pullman passenger coaches purposely are made very heavy in order that they may hold the rails and be unaffected by the slight inequalities in the smoothness of the tracks. Consequently, electric lighting systems for use in railroad work can be big and heavy and solid. There is no necessity for them to be small and compact, accurately automatic and light in weight. Nor do they require to be exceptionally simple, for the railroad companies employ a corps of workmen expert in such subjects to look after them and care for them and see to it that they are maintained at their highest state of efficiency. Incidentally, such service is positive insurance of their practical infallibility and this feature is not beside the issue.

From all of which it surely must appear that the automobile electric lighting system is akin to the railroad electric lighting system in very few particulars. The automobile is light—reduction of weight to the minimum justly has become a fetish in the majority of automobile factories—and it follows that its equipment must also be light. It does not operate at constant speed under ordinary conditions for more than a few minutes at a time. It is run over give and take roads from which very few of the wrinkles (if they may be styled wrinkles) have been smoothed out.

Space is at a premium in the majority of automobiles, which necessitates that the electrical equipment be reduced to the smallest possible size. And despite all the other considerations, each of which introduces its own particular problem to be solved, the equipment must be as simple as it is possible to make it. The word "must" in the foregoing sentence might better have been written in italics, or capitals, in order to give it the emphasis and importance which it deserves.

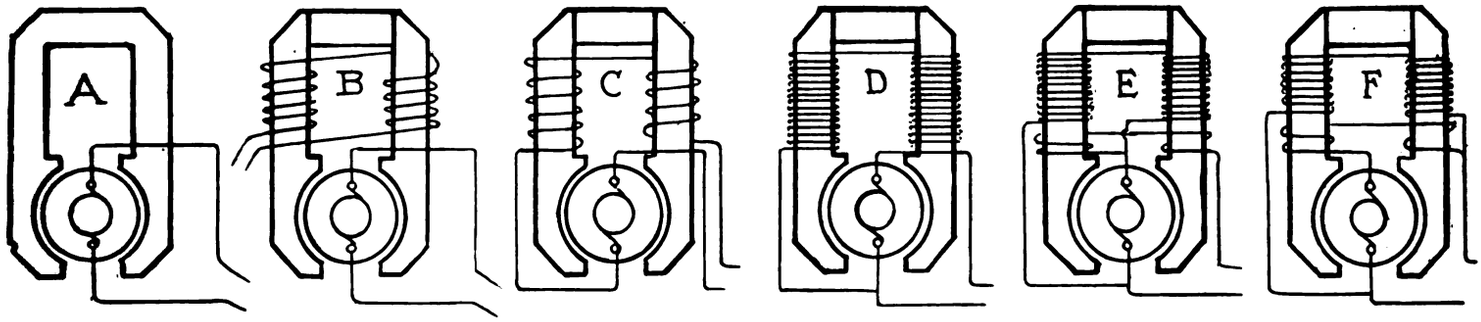
Electric System Must Be Simple.

The apparatus must be simple because the average automobile owner knows little, and, as a rule, cares less about it. The dealer, sad to relate, and in many cases the manufacturer of the car, knows scarcely more than the car owner, and therefrom depends a tale that is sad alike to the owner, the dealer and the car manufacturer, not to mention the electrical apparatus manufacturer. But it probably is saddest of all to the dealer, who, by reason of his intermediate position is expected to know all the manufacturer knows and all the car owner ought to know in the bargain. And that he does not come up to expectations in these respects is largely his own fault, and if he could but be made to see it, his ignorance acts as a veritable boomerang that strikes back at himself.

Educational Campaign for Dealers.

Car manufacturers and electrical equipment manufacturers are willing, nay, anxious, to educate dealers and owners, and dealers in particular, into the mysteries (such as they are) of their apparatus. It is to their advantage to do so, and it most certainly is to the advantage of the dealer to know thoroughly the construction and operation of the particular system with which he comes in contact. And though the car owner scarcely can be expected to be familiar with all the whys and the wherefores of such apparatus it is perfectly legitimate to expect that the dealer shall have at least a working knowledge of the ins and outs of the system with which the car he sells is equipped.

As a matter which cannot well be overlooked, the situation rapidly is approaching the point where it will be absolutely necessary for the dealer to know, and to know thoroughly, the construction and operation and a tithe of the theory of dynamo electric lighting and engine starting systems. Progressiveness requires the assimilation of such knowledge on the part of the dealer, and unless he becomes a progressive in spirit as well as in theory another angle of the situation, which even now is apparent, may exert an unexpected influence that scarcely can be good.



DIAGRAMMATIC SKETCHES ILLUSTRATING THE VARIOUS METHODS OF DYNAMO FIELD WINDING

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Briefly, it is this: Due to the already widespread use of auxiliary electrical equipment more than an inkling of the desirability of knowledge has come to not a few owners who forthwith have set out and discovered for themselves what the dealer has been unable to tell them. So soon as the opinion is permitted to prevail that the dealer cannot help out the owner by explaining the operation of his electrical system in an understandable and intelligent manner, and not in the really ludicrous way it sometimes is attempted, then will the situation become lamentable if it is not so now. And it is up to the dealer to prevent such a situation, and, so far as he is able, to delete that part of it which now exists.

Electric Systems Not Difficult.

As was made clear in the last issue of the Motor World—and as will be made clearer in this and in succeeding articles—neither the dealer nor the car owner will find the road to a working knowledge of the ordinary electric lighting, and, or, engine starting system a particularly hard one to travel, and, to carry the metaphor a little further, only the surface aspects are all that really are necessary.

For reasons that already have been set forth, any electric lighting system to be of practical value must be self-contained. That is to say, the dynamo or generator which serves to charge the storage battery must be incorporated as a part of the system. In fact the dynamo virtually is the heart of the system, for without it as a source of energy the system would be valuable for the purpose of supplying light only until the storage battery became exhausted. Needless to say, the battery could be recharged from an outside source of current, but such methods are not practicable in a great many cases—touring, for instance—nor are they economical, for battery efficiency necessitates that as nearly regular charge and discharge rates be maintained as is possible.

Damage in Low Discharge Rate.

When the battery is charged from an outside source of current—which in itself is a great deal more expensive that to charge it from a generator incorporated in the system—there is a tendency to discharge it below the normal discharge rate in order to reduce the number of trips to the charging station or to "use the juice to get home on" when, according to the condition of the battery, the kerosene lamps really should be used. Such practice, of course, is detrimental to the battery and reduces its efficiency to say nothing of adding to up-keep expense by necessitating more or less frequent trips to the repair shop.

Dynamos are divided into two classes: Alternating current and direct current machines. As the name of the alternating current machine indicates, it generates current, the direction of which alternates, i. e., it flows first in one direction and then in the other. Such machines, however, never are used in automobile electric lighting systems for the good and sufficient reason that it is impossible to charge a storage battery from one of them without the addition of more or less complicated apparatus which scarcely could be expected to find a place on a car. Consequently, the direct current machine is the only one which holds interest.

Three Classes of Dynamos.

Direct current dynamos are further divided into three other classes, which take their names from the method of winding and connecting the field coils. In Fig. A, for instance, in the accompanying illustration is shown a diagrammatic sketch of the wiring used in a permanent magnet dynamo or a magneto. No field winding whetever is used, the armature coils rotating in the magnetic field generated by the permanent magnets and the resultant electric current being collected by means of a commutator having two sections which are connected to the two ends of the armature winding. The arrangement is the simplest possible, of course, and is the basis upon which are builded many of the successful electric systems on the market at present. With the addition of coils to the armature it becomes necessary to add segments to the commutator, for there must always be two segments for every armature coil.

The Separately Excited Type.

In Fig. B is illustrated what is known as a separately excited dynamo such as is commonly in use in large central stations for the generation of current for street lighting and street car operation. In this arrangement, the field pieces are not permanent magnets, but are magnetized immediately a current of electricity is sent through the field windings, a separate source of energy, preferably a smaller dynamo being used for the purpose. Aside from the fact that machines of this type seldom are used in automobile systems, the principal advantage of the arrangement lies in the fact that much of the load is taken off the commutator, sparking is reduced and the life of the parts proportionately increased.

Wherein the Series-Wound Differs.

The series wound dynamo (Fig. C in the accompanying illustration) differs from the separately excited dynamo only in that the field winding is connected in series with the armature coils. That is to say, the current passes in a continuous stream through the field windings and the armature windings, first through one and then through the other. The field winding is composed of a comparatively few turns of heavy wire. Owing to the fact that it is difficult to obtain either constant current or constant voltage with the series machine unless the speed of rotation of the armature is maintained constant within well-defined limits, it seldom is used for automobile work. Another feature which militates against its use is that a series generator, when operated as a motor, runs in the opposite from that in which it generates current. Consequently it is virtually impossible to employ it for combined lighting and starting systems without the addition of complicated gearing and clutch apparatus. The characteristics of the series wound generator is that the voltage is low at light loads but increases rapidly as the load is increased, until the magnetic field reaches the point of magnetic saturation.

About the Shunt-Wound Dynamo.

In the shunt wound dynamo (Fig. D) the field winding, which consists of a large number of turns of comparatively fine wire, is shunted across the brushes which collect the current from the armature. That is to say, the armature and the field winding are placed in parallel. One of its characteristics is that the machine operates as a motor in the same direction as it generates current, for which reason it is used largely where a combined generator-motor unit is required. By reason of the arrangement of the wiring, the exciting current in the field approximates only about 5 per cent. of the total current of the machine; it depends largely upon the voltage at the terminals of field winding and the resistance of the field. Owing to the increased drop in the armature and the decreased field excitation, the voltage of a shunt wound machine decreases rapidly as the load is increased regardless of the speed. From which it appears that if a shunt wound generator is operated as a motor from a constant source of current, its speed will be practically constant regardless of the load, for the reason that the strength of the field remains constant.

Explaining Compound Winding.

As the name of the compound wound dynamo indicates, it is a composite of the two types. The field is composed of two sets of windings, series and shunt, and the machine is styled either long shunt (Fig. E) or short shunt (Fig. F), according to the method of connection of the field wires. In the short shunt machine the shunt coils, which are formed of a large number of

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fairly fine wires, are connected across the brushes, the series winding, composed of a small number of turns of larger wire being connected in series with the brushes The long shunt machine differs from the other in that the shunt connections are made at the terminals instead of at the brushes.

The peculiar characteristic of the compound wound generator, the characteristic which makes it of so much value for all classes of work, is that its winding can be so constructed as to permit either an increase or a decrease in voltage as the load increases. Incidentally, it can be maintained practically constant, regardless of load fluctuations. The compound generator is similar to the shunt generator, in that it operates as a motor in the same direction as it generates current. Compound motors are used, generally, where the load varies considerably, where the extreme speed variations of series motors would be objectionable and where sudden increases in load require increased torque which shunt wound machines cannot give

Connection Making by Amateurs.

From the explanation and with the aid of the accompanying diagrams, it should be a simple matter for the average person, not versed in the intricacies of electricity, to determine the difference between the various types of dynamos as revealed by their methods of winding. Though there should be no excuse for disturbing the various connections which invariably are made correctly at the factory and should not be altered, the diagrams nevertheless will serve to assist in case it should become necessary through accident to make the connections over again. Occasionally it may happen where a dynamo is to be attached by an amateur that difficulty will be experienced, owing to the fact that the machine operates in the reverse direction from that which can be obtained through simple gearing. In this case it is a simple matter to reverse the field connections at the brush holders, which will have the effect of reversing the direction in which the machine generates.

When a Dynamo Refuses to Generate.

Theoretically, any dynamo other than a separately excited one, will generate current immediately it is started, the reason being that when a piece of iron is once magnetized it retains a certain amount of residual magnetism which is sufficient to cause the generation of a slight current. The current increases, of course, immediately the initial flow has been started. If, after a machine has been started, it should fail to generate, the brushes should be examined to ascertain whether they make contact with the commutator. Sometimes a gummy substance, caked on the commutator, accumulates and prevents proper contact being made. This is the result of too much oil and should be removed by applying a small piece of cloth wet with gasolene to the commutator while the machine is running. If the machine still fails to generate, connections to the brushes should be examined, as these are the most prolific sources of such trouble as generally has to be reduced. Occasionally they become loosened and oil collects in such a manner as to prevent proper contact being made. The remedy, of course, is to remove the oil from the contact surfaces and tighten the connections.

Field and Armature Winding Troubles.

Though short circuits in the field or armature winding seldom occur, they are a possibility which should be remembered in "doctoring" a sick machine. Generally, they can be detected, if all the connections are perfectly tight, by a considerable drop in the output of the machine or an absolute failure to generate. When they occur, repairs should not be attempted by any one other than an expert, and the job is preferably one for the manufacturer of the machine who can tell in an instant the exact trouble, with the aid of testing instruments. In most cases it is but the work of a few moments to remove an injured field coil and replace it with a good one, and the cost is low. Armature windings, however, require more time to repair, for the wiring is so interwoven that it is impossible to remove one coil without taking them all out. Thanks to the indefatigability of manufacturers in perfecting their machines, however, trouble with the windings rarely develops, and about the only thing that can happen is a loosening of the terminals of the wires.

How the Terminals Are Marked.

Another frequent source of trouble with which very few, including the manufacturers of cars, are familiar, lies in the connections between the dynamo and the battery, or the switchboard, as the case may be. In the first place, the positive wire of the dynamo, which generally is indicated by a plus sign (+), must invariably be connected with the positive side of the battery. Generally the positive battery terminal is painted red for distinction, and it, also, is marked with a plus sign. The negative wire from the dynamo, of course, must be connected to the negative terminal of the battery, which, in contradistinction to the positive terminal, is marked with a minus sign (—).

RADFORD FORECASTS THE AUTOMOBILE OF FIFTY YEARS HENCE

Prophesies the Utter Extinction of Gasolene Types and the Sweeping Triumph of Electricity—Believes Developments in "Wirelessness" Will Play an Important Part in Bringing About the Result.

In ten years the supremacy of gasolene as a fuel for motor car propulsion will be broken, and electricity will perform the greater part of the work of turning the wheels; in fifty years electricity will not only be supreme, but it will be transmitted to cars by wireless systems, so that automobiles will not have to carry with them storage batteries or other sources of electrical energy. Such, at least, are the expressed opinions of W. H. Radford, consulting engineer of the Warren Motor Car Co., who has very decided views as to the future of the automobile, which, with modifications, are shared by others.

Radford does not believe that the present type of motor car is anything like the car of the future, either in motive power or in body design; he asserts that the short time the motor car has been in process of development has shown only one phase of its possibilities. "The possibilities of the automobile are unlimited," he says. "What has been done is insignificant compared with what will be done."

Gasolene will not last long as a motor fuel, according to the engineer's belief; neither does he incline toward the idea that alcohol will prove a solution of the fuel problem. Kerosene, or kindred petroleum products of the baser orders, he believes will form an important step in the working out of the car of the future, but only one step—toward electricity.

"In fifty years from now, and the probabilities are in less than that, all motor cars will be propelled by electricity," continues Radford. "I do not mean that automobile owners will be compelled to carry around a thousand pound storage battery with them, but they will secure their power from wireless stations.

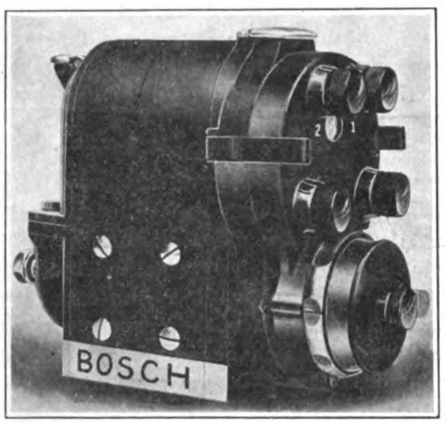
"The wireless system as used now is crude. The high towers will be eliminated and there will be a means of transmitting and catching the current without the use of high voltage now necessary, nor the tall staffs that connect the wires."

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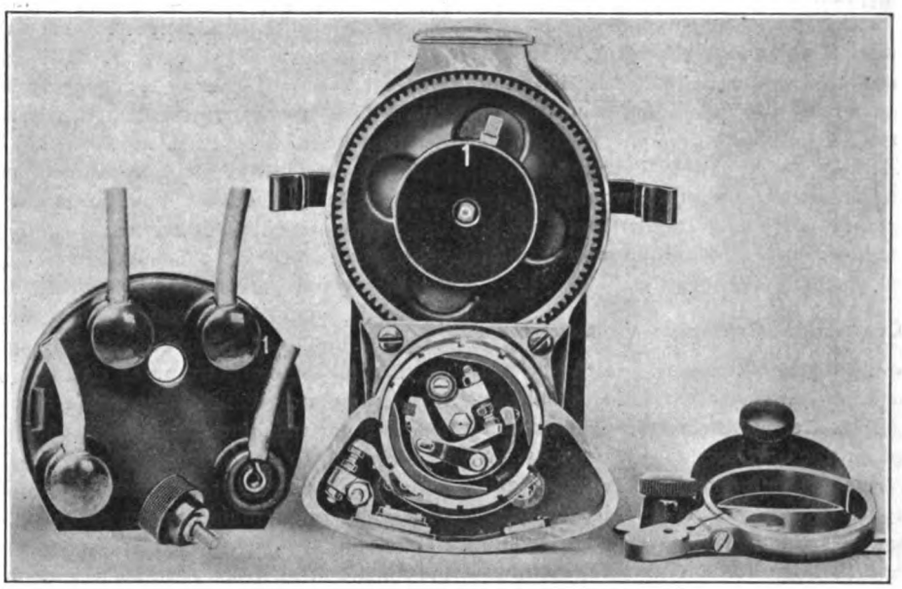
INTENSIFIED SPARKS FROM NEW BOSCH INSTRUMENT

Elimination of Four Magnets That Has Increased Electrical Efficiency—Waterproof Construction Also a Feature.

Despite the high degree of perfection which years of experience and careful designing and workmanship have effected in the various products of the Bosch Magneto Co., the activities of the company and its intimate knowledge of ignition problems have afforded opportunities for improvement from time to time, and though new instruments or new methods of construction seldom are placed on the market, when they are brought out they serve to attract fully warranted attention. In the new type ZR magnetos, which just have been placed on the market, after careful testing extending over a year or more, are exemplified several points in magneto construction which mark an even higher plane of perfection than ever attained before.



BOSCH "ZR" WATERPROOF INSTRUMENT



NEW BOSCH "ZR" MAGNETO PARTLY DISASSEMBLED SHOWING ELEMENTS

In many respects the type ZR magneto is similar to the earlier type DR, which has come into such general use for both pleasure and commercial vehicle work, to say nothing of its application to aeroplanes and motor boats. It differs from the former, however, chiefly in that it has but two single magnets instead of three double magnets, and that it is perfectly waterproof, which also means that it is dustproof and oilproof. Despite the fact that but two single magnets are used, however, the sparks which are produced are quite as intense as those produced by the DR magneto and due to a slight rearrangement of component parts and to refinements of design very heavy sparks are produced at exceptionally low armature rotative speeds, thus facilitating easy starting.

One of the reasons why the magneto produces hot sparks at low speeds lies in the shape of the pole pieces. Instead of being cut off flush with the armature they are extended outward over the armature in the form of long fingers. What is even more surprising is that sparks of sufficient intensity to fire inordinately weak mixtures are produced with the ignition timed to take place with the piston a considerable distance down on the power stroke. In other words, the sparks that are produced with full retard are scarcely less intense than those that are produced with full advance. Another noticeable difference between the type ZR magneto and its prototype, type DR, is in its appearance. Except for the usual timing arm, the ZR magneto is free of external protruberances and presents an unusually smooth and clean exterior.

The method of rendering the instrument proof against the ingress of water or dirt consists in fitting a tight protecting hood at the shaft end, the slip ring connection and the safety gap thus being thoroughly protected. The hood is practically a continuation of the end plate, and in addition to fitting snugly against the magnets is provided with a special packing which ensures an absolutely tight joint. Packing also is used between the magnets. As the distributer plate is fitted to the opposite end, forming a tight joint, the internal parts are completely housed and protected. Another feature which assists in preserving the instrument waterproof consists in the elimination of the opening in the base, which in the older instruments serves to house the brushes, by means of which the return current to the ground is conducted to the engine frame. In the ZR magneto the grounding brushes are enclosed in hollow screws.

Not only is the instrument itself waterproof, but the connections as well are protected. The binding screws of the high tension distributer as well as the binding screw for the switch are of such construction that short circuits through the agency of water are rendered impossible. As a result of the complete housing of the instrument, its mechanism is rendered practically noiseless, even the scarcely audible click of the contact breaker being muffled in the new construction.

Another important improvement in construction which has been made concerns the method of timing the instrument after it has been set in place. Incidentally, it should be added that as the base is standard, the new magneto may be substituted for any of the older type instruments without the slightest trouble. In the older DR type instruments it was necessary in order to ensure accurate timing to remove the dust cover from the contact breaker and the distributor disk. In the new instrument, however, provision is made for timing without the necessity for disturbing any of the parts. Above the distributer gear there is a small window hidden by the upper oil cover. Through this the distributing gear may be seen. On the edges of the window there are two red marks with which the armature may be registered by rotating the distributer gear. A second window is provided in the face of the distributing gear, and behind it there is a disk marked with the numeral "1." Its appearance signifies that the armature is in position to fire number 1 cylinder. In common with the older DR magnetos the new ZR type is produced for both four and six-cylinder engines in either independent or dual form and for either single or double spark.

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USED CAR PROBLEM IS UPPERMOST AT SALES MANAGERS' CONVENTION

(Continued from page 5.)

The proceedings opened on Monday, when three papers were read: "Selling and Advertising," by J. G. Monihan, of the Premier Motor Mfg. Co.; "Motor Car Equipment," by George E. Daniels, of the Oakland Motor Car Co., and C. S. Jameson, of the Willys-Overland Co.; "Freight and Shipping," by J. S. Marvin, traffic manager of the National Association of Automobile Manufacturers. On Tuesday the program was made up of "Territory and Selling Rights," by Alfred Reeves, of the Maxwell-Briscoe Motor Co.; "Annual Models," by Charles W. Mears, of the Winton Motor Carriage Co., and S. D. Waldon, of the Packard Motor Car Co.; "Enclosed and Semi-Enclosed Bodies," by H. O. Smith, Premier Motor Mfg. Co.

Opinions on Motor Car Equipment.

The subject "Motor Car Equipment" probably was productive of the most discussion on Monday. In presenting their papers, both Daniels and Jameson substantially concurred in the opinion that equipment is necessary and that the fullness and quality thereof should be governed by the price and grade of the car. The burden of expression seemed to favor full equipment in the literal sense of the term, one speaker vigorously declaring that the public was not disposed to pay fancy prices for articles of equipment and that it is unfair to ask that it be done when the proper equipping of a car is wholly within the duties of the car manufacturer himself. Several times during the discussion it was suggested that the matter be referred to a committee, which would compile and report back exactly what constitutes full equipment, but the suggestion was not put in the form of a motion and was not pressed.

Opposes Too Much Standardization.

At one stage of the proceedings, when the matter of standardization was talked of, Charles W. Mears, the Winton sales manager, made a strong plea for the retention of individuality. He held that it was neither profitable nor desirable for cars to be too nearly alike, and that carrying standardization too far would rob the industry of the benefits of competition, which are practically priceless. He cited the long defunct "bicycle trust," with which he was familiar, as a notorious and historical instance of the effects of limiting individuality and stifling competition between once wholesome rivals.

From the appearance of things most of the sales managers had set considerable store on the subject "Selling and Advertising," which had been alloted to J. G. Monihan, the Premier advertising man. Monihan, however, disappointed expectations by delivering an address which largely was of a humorous nature, a fact which led Messrs. Mears and Reeves, among others, openly to express regret that such a serious subject should be so lightly treated. Monihan dealt not at all with selling. He talked only of advertising and in most serious vein criticized the methods in vogue in the automobile industry. He seemed to believe that much of the money now spent for advertising should be diverted into indirect channels and suggested that weaving automobiles into paintings by famous artists, and into fiction by equally famous authors, should serve better purposes. He even remarked that compared to the present outlay, the sum of $500,000 would not be too small for the purpose of stimulating artists and authors, and there were those who were not certain that he was humorous when he suggested that the Board of Trade could well afford to provide a fund for that purpose.

Co-operation in Transportation.

If Monihan's address lacked seriousness, the paper read by J. S. Marvin, traffic manager of the N. A. A. M., was intensely serious and practical. Among other things, he advocated the organization of transportation departments in all automobile factories. He said that such departments considerably would better the service obtained from railroads, and that if they would forward bills of lading to the N. A. A. M. traffic department, and that if all dealers similarly would forward their freight receipts to the N. A. A. M. for audit, the national organization would be able to render service which would return to makers and dealers in the form of dollars. Marvin explained that there are many zones in which the application of freight rates results in overcharges which only can be discovered by an expert who has to do with railroad affairs. Marvin also asked the sales managers to urge dealers promptly to unload freight cars when they are received, and in that way help prevent the shortage of automobile freight cars, which caused so much embarrassment last season.

Many Dealers Better Than Few.

On Tuesday, when Alfred Reeves handled the topic "Territory Selling Rights," he compared the policy of giving large slices of territory to a few large distributers with that of proportioning the country into many small parcels and handling all of them direct from the factory. He himself unhesitatingly declared that he had rather have 10,000 dealers selling one car each than 100 dealers each selling 100 cars. Reeves also touched on the matter of "poaching," that is, the practice of one dealer selling cars in another dealer's territory, which has given rise to all manner of friction and bad feeling, and he and most of the others present shared the belief that under such circumstances the commission should be equally shared by the two dealers concerned, but that circumstances should govern cases, and the manufacturer be the arbiter when such disputes arise.

Novel View of Discount Situation.

Discounts did not very largely enter into the convention, but Reeves was one of those who mentioned the subject. He made the somewhat novel point and caused some head shaking by expressing the belief that cars listing at less than $2,500 should be subjected to a smaller discount than at present prevails, while those that list above that price should have a better discount. He defended his position on the ground that dealers who handle large cars are compelled to do more trading and, therefore, incur more risk.

In selecting C. W. Mears, of the Winton company, and S. D. Waldon, of the Packard company, to treat the subject "Annual Models," it probably was assumed that they represented opposite points of view. While most manufacturers incline away from the annual model policy, Packard is almost irrevocably committed to the system, and is one of those who generally is charged with abnormally "forcing the season" by announcing next year's models before the sale of the previous year's product has been completed. In his paper, Mears cited arguments for and against the system, and while Waldon naturally defended the Packard stand and traced the manner in which the season gradually had been "forced" for several years past, his stand was not so pronounced as had been expected. He, in substance, said that the problem will work itself out in a natural way and be worked out by each individual in his own way.

Early Models Kill Spring Trade.

The concensus of opinion, however, appeared to be opposed to the annual model policy, and there was small dissent from the assertion that spring business practically has been killed by the launching of new models in May, June and July, and in

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one instance in February—so it came out at the conference—the February launching being in the nature of private information concerning 1913 models which had been conveyed to agents in February, 1912.

What Is Best Announcement Month?

There was some discussion as to what month best would constitute the opening of a new season, but nothing came of it. One of the sales managers suggested December as being the best month for that purpose, holding that as it is the poorest selling season, it would be stimulated by the announcement of new models.

Even those who decried the annual announcement of new models agreed, however, that for factory purposes a change of model numbers or a designation of some sort is absolutely necessary.

Body Standardization Discussed.

"Enclosed and Semi-Enclosed Bodies," the subject assigned to H. O. Smith, of the Premier Motor Mfg. Co., was of more importance than appeared on the surface. The demand for such bodies is growing, and those manufacturers who do not build their own bodies have been caused no little embarrassment. Although increasing, the demand is purely problematical and the car maker is, therefore, in no position to place advance orders for bodies or to take undue chances. Mr. Smith advanced the suggestion of a standardized chassis or frame and the development of a standard body or bodies to fit such chassis or frames, believing that certain measurements at least would tend greatly to minimize the present difficulties, which, however, were in no way solved by the discussion. J. W. Fulreader, of James Cunningham Son & Co., who not only build cars but who are even more extensive body builders, pointed out that even a standardized chassis and a standardized body would not help matters. There is the matter of fenders and too many others to be considered.

Those Who Attended the Meeting.

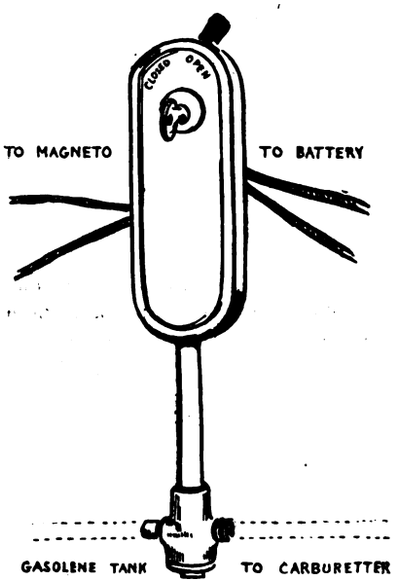
Those in attendance at the convention were as follows: Autocar Company, H. M. Coale; Cadillac Motor Car Co., A. C. Howard; Cartercar Company, H. R. Radford, W. S. Williamson; Chalmers Motor Co., Percy Owen; Jas. Cunningham Son & Co., J. W. Fulreader; Flanders Motor Co., Wm. E. Metzger; Hudson Motor Car Co., C. C. Winningham, R. B. Jackson, E. C. Morse, R. D. Chapin; International Motor Co., H. D. Watson; Knox Automobile Co., H. K. Sutherland; Locomobile Co. of America, J. T. Roche; Lozier Motor Company, C. E. Emise; Maxwell-Briscoe Motor Co., Alfred Reeves; Mercer Automobile Co., W. T. White, E. H. Sherwood; Mitchell-Lewis Motor Co., Leo A. Piel, J. M. Cram; Moline Automobile Co., W. H. VanDervoort, Rufus Walker, Jr.; Moon Motor Car Co., Wm. J. Coghlan, E. J. Moon; National Motor Vehicle Co., J. M. Clarke; Nordyke & Marmon Co., Herbert H. Rice; Oakland Motor Car Co., Geo. E. Daniels, J. B. Eccleston; Packard Motor Car Co., H. H. Hills, S. D. Waldon; Paige-Detroit Motor Co., Jas. F. Bourquin, H. Krohn; Peerless Motor Car Co., R. S. Schmunk; Pierce-Arrow Motor Car Co., J. Elmer Pratt; Premier Motor Mfg. Co., John Guy Monihan; Selden Motor Vehicle Co., James Joyce; S. G. V. Company, F. F. Weston; F. B. Stearns Co., R. H. Williams; Stevens-Duryea Co., H. C. Beaver; E. R. Thomas Motor Car Co., C. S. Henshaw; The White Company, Walter C. White; Willys-Overland Co., C. S. Jameson; Winton Motor Carriage Co., C. W. Churchill, C. W. Mears.

Favary's Substitute for Pneumatic Tire.

One of the most recent ideas formulated with a view to the production of something better and less fragile than the pneumatic tire was described, scientifically and at length, in a paper, entitled "Proposed Substitutes for Pneumatic Tires," read last week before the Metropolitan section of the Society of Automobile Engineers by Ethelbert Favary, the inventor of the tire in question, who has organized a company for its exploitation. Briefly, the tire differs from the pneumatic in that it is not inflated, and from the solid tire in that it is not composed of a single ring of rubber, nor does it depend upon the rebound of compressed rubber for its resiliency. A concentric series of endless bands of specially woven fabric and rubber are superposed, but are supported, so that they do not touch the wheel rim or each other, by aluminum blocks quite closely spaced. The first series of blocks separates the first band from the rim; the second series is spaced so that the blocks rest on the first band midway between the blocks of the first series, and so on, there being three bands and three series of aluminum blocks. The tension of the rubber-and-fabric bands, and consequently the resiliency of the tire, is regulated by the use of shims under the blocks. Tires made according to this plan have been subjected to severe tests in England, and the results are said to have been very satisfactory.

Locks Both the Fuel and the Spark.

In these days of many automobiles and many persons capable of driving them, the risk of theft of a car left unattended is by no means inconsiderable, and naturally there are many ingenious devices on the market designed to thwart such robbery. Not the least ingenious of these is the "Capitol autolock," shown in the accompanying illustration, which not only shuts off the gasolene when the key is turned in the Yale lock, but also disconnects both the battery and the magneto, so that neither fuel nor spark can be supplied to the motor. The gasolene valve is fitted with a strainer. The instrument is attached to the riser of the front seat, or, for that matter, to any convenient point where the gasolene pipe and the wiring can be carried to it. The lock is marketed by the Esco Auto-Lock Sales Co., 1000 Woodward avenue, Detroit, Mich.



CAPITOL COMBINATION LOCK

Marathon Takes Over Chicago Agency.

The Ross Motor Sales Co., 1712 South Michigan avenue, Chicago, which has handled the Marathon car, has been taken over by the Marathon Motor Works, of Nashville, Tenn., and henceforth will be operated as a factory branch. Ross will continue to officiate as manager of the establishment.

Victor Pump Enlarges Name and Capital.

The Victor Pump Co., of Grand Rapids, Mich., which manufactures oil and gasolene pumps, has changed its name to the Victor Pump & Engine Co. Concurrently, it has increased its capital stock from $12,000 to $25,000.

G & J to Erect $100,000 Warehouse.

The G & J Tire Co., of Indianapolis, has let contracts for the erection of a warehouse in that city, at Louisiana and Murphy streets. The plans call for an outlay of $100,000.

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De Palma at Length Gets a Grip on the Cup

After Several Attempts Plucky Italian Driver Leads Home the Vanderbilt Field and at 70-Mile-an-Hour Pace—Tetzlaff, Who Was Runner Up Till He Failed, Also Shares the Glory—Hughes in His Mercer is Third.

Ralph De Palma surely has shaken off the jinx which has pursued him with more or less persistence for the better part of a year. If his win in the Elgin road races did not serve to make plain that fact, then his victory in the Vanderbilt cup race yesterday (Wednesday), certainly has done so.

Always careful and always smiling even in the face of defeat when it comes his way, De Palma drove his usual heady race over the Wauwatosa course near Milwaukee, true to the form that has established his reputation as one of the foremost racing drivers of the country, if not of the world. Piloting the same Mercedes car with which he won the Elgin race, and so nearly won the 500-mile race on the Indianapolis Speedway last May, De Palma won from a field of eight starters in 4:20:31.54, just a fraction more than 42 seconds ahead of Hughie Hughes in a Mercer special, who had driven a consistent race throughout and who on more than one occasion appeared the probable winner. It was a grand struggle between the two.

De Palma's time figures out at the average of 69.4 miles an hour for the 299 miles, and though this is about 5 miles an hour slower than Ralph Mulford drove when he won the last Vanderbilt cup race at Savannah last year, part of the discrepancy at least can be charged to the condition of the course, which was not of the best, and part undoubtedly can be charged to the fatal accident to Bruce-Brown in practice the previous day. Brown was universally liked by all the drivers, and because of his accident the remaining drivers practically had agreed not to attempt record smashing.

That De Palma's victory was due to his consistent driving and consummate generalship is revealed by the fact that throughout the race he never attempted to force the pace. Teddy Tetzlaff, driving a Fiat, as usual, did all the forcing, and before he was forced out in the 26th lap, had opened up a lead on De Palma of something over six minutes. But the terrific pace he had set—he is credited with having made the fastest single lap of the day, a circuit of 7.88 miles in 6 minutes 15 seconds, which is at the rate of 75 miles an hour—told on his car toward the end and he retired when 4 minutes ahead of De Palma with burned out bearings. Almost from the first, Tetzlaff led the field and his driving was the feature of the day. Spencer Wishart, driving his own Mercedes, was third, and fourth place went to Gil Anderson in a Stutz. Only these four drivers finished.

Mulford, on whom great hopes had centered by reason of the speed of his giant Knox and his experience in previous Vanderbilt races, was the first to retire. Before he had finished three laps he quit, and it was reported that magneto trouble had caused his withdrawal. At that time Tetzlaff was leading by a comfortable margin, with Wishart and De Palma seesawing for second place, Hughes an easy fourth and the others trailed out astern. Practically the same formation was preserved up to well past the middle distance, when Tetzlaff was forced to stop for tires. De Palma also had made several stops, and though Wishart made a game bid for second place, once or twice passing De Palma, he was unable to hold the pace. Hughes in the meantime had been driving consistently and fast and was right on the heels of De Palma. Anderson in the Stutz and Nelson in the Lozier entry were in the background. Apparently, Nelson never had a chance, for he suffered engine trouble and soon after the 200-mile mark was passed was some 10 laps behind the leaders. George Clark, in the third Mercedes, also had experienced trouble and was never a dangerous contender.



RALPH DE PALMA

When the 250-mile mark was passed, and with only 49 miles more to go, De Palma was leading Hughes in his Mercer by only 45 seconds, and from then on the race developed into a duel between these two, with Wishart third and Gil Anderson fourth. Nelson, in the Lozier, was so far in the rear that his hopes of winning were exceedingly slim. But though Hughes gave De Palma a hard fight, that at any moment gave promise of developing into a winning fight, he was not able to cut down the 45-second lead that separated him from the slim Italian, enough to give him a real chance at the laurels.

Of the 10 drivers who originally had entered, but eight came to the starting line, neither Charles Merz, who was scheduled to drive a Stutz, nor Pullen, whose entry was a Mercer, putting in an appearance. The complete list of starters and the order in which they finished is as follows:

Driver and Car.	Time.
1. Ralph De Palma, Mercedes	4:20:31.54
2. Hughie Hughes, Mercer	4:21:14.34
3. Spencer Wishart, Mercedes	4:36:35
4 Gil Anderson, Stutz	4:39:40
5 George Clark, Mercedes	4:51:39
6. Harry Nelson, Lozier	Out in 26th lap
7. Teddy Tetzlaff, Fiat	Out in 26th lap
8. Ralph Mulford, Knox	Out in 3d lap

By winning the race, De Palma increased his bank account by something over $4,000, of which $3,000 represents the first prize and the remainder the "inducements" offered by accessory manufacturers. His Mercedes car was sparked by a Bosch magneto, was carried on Michelin tires and the "mixture" was furnished by a Rayfield carburetter. Hughes, who was second, drew down $2,000 for his share of the prize money, Wishart got $1,000 and Gil Anderson got $500.

Despite the 10 days' postponement and the general ill luck that has followed the contest since it originally was scheduled for the Milwaukee course, no dampening of ardor was apparent in the crowds that assembled around the course. The grandstands filled early and only the excellent policing prevented the thousands of spectators from crowding past the side lines and spilling over onto the course. Weather conditions were excellent. The day dawned bright, and long before 11 o'clock, when De Palma was sent away to lead the field, sunshine had tempered the otherwise chill breeze that blew out of the southeast and dissipated the smoke of the cars.

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BURMAN NEAR TO RECORD ON ST. LOUIS DIRT COURSE

Drives Mile in 47 3-5 Seconds, But as Stop-Watches "Don't Count," It Means Nothing—Proves "Lion," as Usual.

Robert Burman, who has been consistently smashing records all over the country, under the apt guidance of E. A. Moross, almost smashed another one on Saturday last, 29th ult. Only the fact that the timing was done with ordinary stop watches instead with the electrical timing device prescribed by the American Automobile Association saved the record.

The trial was made in St. Louis on the new State Fair Grounds mile track and was part of the program which Moross had prepared and which was long enough to stretch over two days. Burman drove the mile in his 300-horsepower Benz in 47⅗ seconds, which is just one-quarter of a second faster than his own one-mile world's record made at Brighton Beach, New York, on Labor Day.

On the second day, he drove even faster, and was clocked for the mile in 46 seconds flat. But neither will constitute a record, for the reason that has been stated.

Burman did other things as well, of course. For instance, he won the Remy Brassard in straight heats, which feat ought to be second nature by now, for only once or twice has he permitted the celebrated "meal ticket" to slip through his fingers. Harvey Ringler, in a Mercer, and Raimey, in a Cino, were the other of Moross's string who showed in the limelight. The summary:

Five miles, class C, under 450 inches displacement—Won by Raimey, Ohio; second, Harvey Ringler, Mercer. Time, 4:02.

Five miles, class C, under 600 inches displacement—Won by Robert Burman, Cuttin; second, Savin, Ohio. Time, 4:02.

Three miles, for Remy Brassard and Trophy—Won by Robert Burman in straight heats. Time, 3:19⅕, 3:06½.

One mile exhibition by Robert Burman (Benz)—Time, 48⅘ seconds.

One mile exhibition by Robert Burman (Benz)—Time, 47⅗ seconds.

Five miles, free-for-all handicap—Won by Robert Burman, Cutting (20 seconds); second, Savin, Ohio (scratch). Time, 4:55.

Indianapolis Racemeet Declared Off.

Owing to the fact that E. A. Moross had too many other pressing engagements, including a racemeet at St. Louis and several others in surrounding cities, to say nothing of the postponed Grand Prix race in which star Robert Burman is scheduled to appear, it was found necessary to call off the meet which was to have been held at Indianapolis on the 28th ult. It was to have taken place on a one-mile dirt track and not on the Speedway.

Speedway Race to Stimulate Small Motors.

Unless a hitch of some kind develops, which is not likely, the next 500-mile race on the Indianapolis Speedway, which is scheduled for May 30th, 1913, ought to serve as a material stimulant to manufacturers to develop the motor of medium power, for the conditions which have obtained in the past have been changed so as to make the long grind essentially a contest for cars in the medium power class.

Under the new conditions, which just have been issued by director of contests Chas. W. Sedwick, only cars with less than 450 cubic inches piston displacement will be eligible; this year and the year before, the limit was 600 cubic inches. Incidentally, the minimum weight restriction has been reduced from 2,300 pounds to 1,600 pounds. As was the case last May, the field will be limited to 30 entries, which must be in the hands of the promoters between the dates of January 1st, when the lists open, and May 1st, when they close. Otherwise, the conditions are much the same as have obtained in the past, eligibility requiring that a speed of at least 75 miles an hour be demonstrated for a complete lap of the 2½-mile oval.

On the day following the big event it is planned to hold a series of shorter races, tentative arrangements scheduling either the Wheeler & Schebler trophy, the Prest-O-Lite trophy or the Remy Brassard for competition as the principal feature. Incidentally, an attempt will be made to obtain a number of notable foreign entries.

Dealers to Back New York Racemeet.

The Motor Dealers' Exhibit Co., which is composed of George Robertson and a number of other New York City automobile and supply dealers, has arranged to stage a racemeet on the Brighton Beach track, Brooklyn, N. Y., on Saturday afternoon, October 19th. A sanction for the event has been issued by the American Automobile Association and the entry blanks will be out the first part of next week.

Physician Heads Illinois Club.

The Clinton County Automobile Association has been formed in Carlyle, Ill., and the following officers have been elected: Dr. J. J. Marony, president; Joseph Schaefer, secretary; A. M. Leonhardt, treasurer. One automobile owner from each of the surrounding townships will be named as vice-presidents.

DISBROW TROUPE DISPLAYS PACE ON DETROIT TRACK

Disbrow Himself Displays Most of It by Taking Four of Seven Events Also Turns a Fast "Fifty."

Louis Disbrow, who is emulating certain other worthy gentlemen, visited the State Fair track in Detroit, Mich., on the 29th ult., with his following of racing drivers and cars. And even if his followers did not do anything very startling, Disbrow distinguished himself by winning four of the six events.

The piece de resistance of the meet, which was held under the auspices of the Michigan State Agricultural Society, was a 50-mile time trial, and of course it was Disbrow who turned the trick. Driving the Simplex with which he has done such good execution of late, he negotiated the 50 laps over an indifferent course in the excellent time of 45 minutes and 32 seconds. Inasmuch as the best previous time for the distance stands at 47:21.65, where De Palma set it last September at Syracuse, driving the very same car, it is altogether likely that Disbrow will be allowed another new record to his string. The remainder of the meet furnished mediocre sport at best, none of the races being closely contested, and few of them developing anything like real speed. The summary:

One mile time trial, free-for-all—Louis Disbrow (Simplex), time, 51⅕ seconds; Kilpatrick (Hotchkiss), time, 58⅘ seconds; Wm. Endicott (Case), time, 59⅗ seconds.

Five miles, class E—Won by Ulbrecht (Case); time, 1:53⅗.

Two mile time trial by Louis Disbrow—(Jay-Eye-See), time, 1:53⅗.

Five miles, class E—Won by Wm. Endicott (Case); second, Ulbrecht (Case). Time, 5:09.

Two mile handicap, free-for-all—Won by Louis Disbrow (Simplex), from scratch; second, Kilpatrick (Hotchkiss), ¼ mile. Time, 1:55.

Five miles, free-for-all—Won by Louis Disbrow (Case); second, Wm. Endicott (Case); third, Ulbrecht (Case). Time, 5:14⅘.

Five mile handicap, free-for-all—Won by Ulbrecht (Case), 10 seconds; second, Wm. Endicott (Case), five seconds; third, Kilpatrick (Hotchkiss) scratch. Time, not not taken.

The frayed ends of stranded conductors are decidedly dangerous as producers of grounds and short-circuits, which often are difficult to detect.

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SCARCITY OF ENTRIES SNUFFS OUT GLIDDEN TOUR

Its Formal Abandonment by A. A. A. Not Unlooked For—Manufacturers and Southern Owners Alike Proved Lukewarm.

The ninth annual national reliability tour of the American Automobile Association, better known as the Glidden tour, is off. Once before—last year—it was called off, but it was at once "rescued" and called on again. This year, however, there will be no restoration, though it is promised that strenuous efforts will be made to revive it next season. The fate of the tour was decided yesterday, Wednesday, at a meeting of the touring board of the A. A. A. held in New York City. The decision to abandon the contest was made because of lack of entries, which it was known had been causing serious misgivings—even when it was bravely announced that it might become necessary to limit the number of starters to 100.

The abandonment of the contest is in no wise surprising, as up to last week but 15 entries had been received and neither the postponement of the starting date from October 7th to October 14th, nor the efforts of W. J. Morgan and J. A. Hemstreet, who were sent by the A. A. A. to Detroit and New Orleans, respectively, to endeavor to swell the entry list, proved availing in adding to the number already "signed up." The Detroit manufacturers could not be induced to "warm up" or display real interest, while Southern entries which had been promised dissipated in thin air and could not be found when sought for.

Even though enthusiasm for the tour has not been at fever heat in the factories, such has not been the case along the route which had been laid down from Detroit to New Orleans. In many of the Southern cities through which the tourists were scheduled to pass the mere fact has been sufficient to stimulate the movement for good roads and even if the tour has been abandoned, its promotion will not have proved wholly vain

A. A. A. Reinstates One and Denies Two.

In addition to Joe Dawson and L. E. Stuart, his manager, F. E. Radina, of Cincinnati, Ohio, has been reinstated by the A. A. A. contest board. Like the other two, Radina had been disqualified for competing in an unsanctioned race meet. Andrew Burt, of Chicago, who automatically had disqualified himself by similar and related offenses, was definitely suspended until January 1st next Harry S. Moore, the Cleveland (Ohio) agent for Stutz cars, was disqualified for a similar period for advertising performances of Stutz cars at Indianapolis and Elgin as being performances of "strictly stock cars, the same as you buy." The Schacht Motor Car Co., of Cincinnati, which on August 1st was disqualified until January 1st for advertising of a similar nature applied for reinstatement, which, however, was denied by the A. A. A board, as was the application of Theron Duby, who, in December, 1911, was suspended for two years for competing in an unsanctioned race meet at Dewitt, Iowa, under the assumed name of Bliss.

Cincinnati Repeals Bulb Horn Law.

Cincinnati, which is the only city of any size in the United States which up till recently has permitted the use of only old-fashioned bulb horns, finally has brought itself abreast of the times by repealing the bulb horn law which had been in force since Dec. 14, 1903. The superseding measure, which prescribes only that "it shall be unlawful for any person to use a signal device which will not produce an abrupt sound sufficiently loud to serve as an adequate warning of danger," is similar to the ordinances adopted by St. Louis, Chicago and Newark and other large cities.

Automobile Ideas in Horse Drawn Rigs.

There is no doubt that motor cars started out by borrowing ideas from carriage construction; but the time seems to have come when the borrowing is going the other way, as is indicated by the fact that at least one firm is building sleighs with doors similar to those on motor cars and calling them "fore-door sleighs." Glass windshields of the motor car type also are finding favor with users of horse-drawn carriages, while "automobile seats" have been in vogue for several years.

When Chains Will Not Prevent Skidding.

While chains prevent skidding in a majority of cases, they sometimes fail to do so. For instance, if the brakes are set too hard, so as to lock the wheels, the tires may come to a stop, resting on the ground between the cross chains, when they will skid quite freely. This is a strong argument in favor of properly equalizing the brakes and against the practice of locking the wheels with the brakes.

Benzol for Flushing Fuel Tanks.

It is worth knowing that any residue left by gasolene, and even fuller's earth, can be dissolved and washed out with benzol. It is good practice, therefore, to wash out tanks with benzol occasionally, flushing the gasolene line and the carburetter—the entire gasolene system—at the same time.

BRUCE-BROWN MEETS DEATH IN VANDERBILT PRACTICE

Wealthy Young New Yorker Victim of a "Blow-Out"—Had Foreboding of Evil and Had Almost Decided Not to Drive.

David L. Bruce-Brown, whose reputation as a racing driver was made in a number of important events both here and abroad, and whose fame was spread far and wide when he won the Grand Prix race at Savannah two years in succession, was killed in practice for the Vanderbilt cup race near Milwaukee, Wis., on Tuesday, 1st inst., and his mechanician, Tony Scudalari, was probably fatally injured.

The accident which resulted in Brown's death was caused by the blow-out of one of his rear tires and occurred after he had made several fast laps of the course, of which he had a poor opinion. One day last week, in speaking of the course to a Motor World man, he decried its condition and declared that it was such a menace to life and limb that he would not drive on it. But he changed his mind and his death resulted. Although he had never been in a serious accident, he had a premonition that something might happen during the race for several days previous to its running he requested his family physician to accompanying him to Milwaukee to be on hand in the event of trouble.

Brown, who was only 26 years old and wealthy in his own right, was an unusual type of driver. He was gently born and gently reared, and it always has been more or less of a conundrum why he turned professional and took an active part in such a business. But his love for the sport was manifested early, and from motorcycles he soon graduated to motor cars. He first sprang into prominence as a racing driver in 1908, when after running away from school he competed in a series of events on the Florida beach and established a one-mile amateur straightaway record of 33⅗ seconds. Since then he has taken part in nearly every race of importance, his most recent feat being the capturing of the first leg of the Grand Prix race in France a few months ago. He was a big, strapping, fine looking specimen of young manhood, who lost as gracefully as he won.

When the Wheels Are Going Around.

When a car with 36-inch wheels is moving at the rate of four miles an hour, the wheels are turning at the rate of 37 revolutions per minute; at 10 miles an hour the wheels turn 93 revolutions per minute, and at 25 miles, 245 revolutions per minute.

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DIESEL TYPE OF ENGINE IN FARM TRACTOR FIELD

British Manufacturer Produces "Semi-Diesel" That Does Excellent and Economical Work—How It Operates.

Whatever may be the future of the Diesel engine for road vehicle propulsion, and it certainly appears to be a bright one, at least a start has been made and according to present indications it is a very substantial start, indeed. Dr. Rudolph Diesel himself has said that within a year at most Diesel-engined commercial vehicles would be seen on the roads, and it is fairly well known that his experiments with a Diesel-engined railroad locomotive are so far advanced as to have warranted exhaustive tests by wealthy and influential German railroad interests.

Within the past few weeks a British firm, Walsh & Clark, Ltd., of Guiseley, Leeds, Eng., after years of quiet development, has brought out and placed on the open market, a Diesel-engined agricultural tractor, which under test has shown surprising efficiency and which well may be expected to serve as the thin end of the wedge which will open up a wide field for this most modern form of prime mover. It is true that Walsh & Clark's tractor employs what has come to be known as a "semi-Diesel" engine, but it nevertheless is a Diesel engine operating on the Diesel principle, and so far as is known it represents the first practical application of this form of power to a road vehicle. Up to the present time but one of these vehicles has been constructed, but the results which have been obtained with it and its remarkable fuel economy and general efficiency leave little room for doubt regarding its future production in quantities.

Cheapest Oil Fuel is Utilized.

As everyone who knows anything about Diesel engines is aware, the motor will thrive on thick sirupy oil as black as a hat and nearly as repugnant as the slime that collects at the bottom of stagnant pools. The fuel virtually is the residue after practically all of the good has been extracted from the crude petroleum. And as it is the residue, its price is proportionate. At present it can be purchased at five or six cents a gallon in almost any quantity. And not only does the Diesel engine consume almost the cheapest of fuels, but its wants are extremely moderate; a little more than half a pint per brake horsepower hour is all it requires. All of which tends to make plain the very evident economy of this form of power. The thermal efficiency of the Diesel engine—that is to say the proportion of power developed from the actual number of heat units in the fuel—is higher than it is in any other known form of prime mover.

The motor in the Walsh & Clark tractor is of the two-cycle type, and has two cylinders opposed to each other and measuring 9 inches bore and 12 inches stroke. The indicated horsepower is 70. Cast integral with the cylinders there is an immense water tank, water being employed to ensure the proper cylinder temperature. The water is circulated through a vertical tube radiator by means of a plunger pump and three fans serve to force a cooling draft over the pipes.

Operation Without Ignition Apparatus.

The cycle of operations of the motor is exactly the same as obtains in the ordinary two-cycle engine, with the exception that no ignition apparatus is employed. The outward stroke of the piston is the power stroke, of course. About two inches before the piston reaches bottom dead center, the exhaust port in the cylinder liner is opened. As the exhaust gases are under pressure they escape through the port while at the same time, or rather a fraction of a second later, the admission port opens and pure air compressed to approximately three pounds pressure in the crankcase is admitted and assists in scavenging the burned charge. The air then is compressed to about 170 pounds pressure and at or near the top of the stroke the liquid fuel is forced into the combustion chamber by means of a pump, the fuel being under approximately 450 pounds pressure. Immediately it enters the chamber it explodes spontaneously by reason of the high temperature and the cycle of operations is repeated. Speed variations are obtained by altering the amount of fuel admitted, the stroke of the oil pumps—there is one for each cylinder—being varied by means of an eccentric and link movement for this purpose. Another interesting feature is that just prior to the admission of the fuel, water is sprayed into the combustion chamber, the effect being to reduce the temperature and thus to reduce the tendency to pre-ignition. Incidentally the injection of small quantities of water assists the more complete combustion of the mixture and makes for smooth operation.

Compressed Air an Important Factor.

As is the case with all Diesel engines, compressed air forms a valuable adjunct to the operation of the motor. The air is compressed by a small pump operated from the camshaft to 180 pounds pressure and then is utilized for starting the motor and for increasing the average pressure on the pistons. It is necessary in starting, of course, to heat the combustion chambers and heads thoroughly, and for this purpose two small kerosene blow lamps are provided. The operation requires not more than five minutes, however, and scarcely can be termed a drawback. The normal speed of the engine is 320 revolutions a minute.

In regard to the remainder of the tractor, there is nothing really startling in its make-up. The engine drives the rear wheels through the intermediary of a three-speed selectively operated change gear mechanism which gives 1.8, 2.5 and 5 miles an hour, respectively. Final drive is by means of the orthodox side chains. The clutch is of the single flat plate type and is faced with frictional material. As the engine, in common with nearly all two-speed engines is readily reversible, no reverse speed in the change gear mechanism is necessary.

Extent of Ford's English Production.

According to P. L. D. Perry, its manager, the Ford factory, in Manchester, England, produced and sold 3,200 cars in Great Britain during the past season, which is a greater number than was sold by the next three largest British automobile producers. Perry, who last week sailed for Manchester after a visit of several weeks to this country, estimates that the Ford plant on "the other side" next year will build 6,500 cars for the British market alone, and, approximately, 3,500 more to meet the European demand.

Hot Soldering Iron to Start Screw.

The application of a good hot soldering iron to the head of a small screw that is hard to start will sometimes help matters by disturbing the rust between the metal surfaces. An overnight soaking with kerosene, following the use of heat, will loosen all but the very worst cases.

Charcoal for Valve-Grinding Purposes.

A fine finish can be given to valves, when grinding them, by the use of powdered charcoal—just ordinary charcoal. This substance cuts rather slowly for heavy grinding, but makes a fine finish.

Water Not Good for Bronze Bearings.

A bronze bearing that runs hot never should be cooled with water. If it is not possible to wait for the bearing to cool naturally, which of course is the best thing to do, use oil for the purpose.

Pure nickel is the only common metal besides iron that is attracted by a magnet. It is much less susceptible to magnetic action, however, than iron.

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1,016,723. Automobile Tag Holder. William B. West, Philadelphia, Pa. Filed April 5, 1911. Serial No. 619,066. (Cl. 40—10.)

A support for automobile number plates comprising a channeled standard, an arm of channel section carried thereby, a plurality of resilient means one of which is connected with the standard and the other with the arm and both adapted to engage a number plate and hold said plate in said channel members, and means to secure said support to an automobile frame.

1,016,726. Lamp Adjusting Mechanism. Joseph Andzik, Dayton, Ohio. Filed Sept. 22, 1911. Serial No. 650,670. (Cl. 240—62.)

1. A combination with a steering mechanism of a motor vehicle, of a vertically disposed shiftable shaft actuated by said mechanism, a holder fixed to and movable with said shaft, oppositely disposed angle-shaped arms movably mounted in the upper portion of said holder and adapted to support a lamp, and a weight arranged within the holder and connected to said arms for normally maintaining the arms vertically.

1,016,871. Resilient Wheel. Howard Wilbur Brooks and Smith Frederick Krupp, Memphis, Tenn. Filed April 21, 1911. Serial No. 622,470. (Cl. 152—28.)

1. A resilient wheel comprising a hub, a plurality of spokes radiating therefrom and on opposite sides thereof, rims secured to the outer ends of the said spokes, bolts extending from the spokes on one side of the wheel whereby the rim is positioned thereon, a U-shaped tire positioned between the said rims, a plurality of alining openings in each side of the tire, a plurality of thimbles carried by the said tire, each thimble being positioned by engagement in one pair of said alining openings, the said bolts connecting the said spokes and rims extending through the said thimbles and being normally out of engagement therewith, together with a number of springs each in engagement at one end with the hub and at the other end with the said thimbles whereby the said tire is resiliently mounted with respect to the hub.

1,016,895. High Tension Magneto Ignition Apparatus for Internal Combustion Engines. Alexander Marcus Patton, Belfast, Ireland, assignor to Chambers Motors Limited, Belfast, Ireland. Filed April 6, 1909. Serial No. 488,278. (Cl. 123—149.)

A driving connection of the type referred to comprising in combination a driving shaft, a driven shaft, a lever upon the driving shaft, a sleeve mounted upon the driven shaft, a spring having one end connected with the driving shaft and the other end connected with said sleeve, a stationary hollow ratchet, a pawl within said ratchet and pivoted upon the aforesaid sleeve, a weight connected with said pawl and adapted to be engaged with the aforesaid lever on the driving shaft for the purpose of releasing the pawl from the ratchet and a stop upon the sleeve for engaging said lever, substantially as and for the purpose hereinbefore set forth.

1,016,896. System for Inflating Pneumatic Tires. Charles A. Rivers, Denver, Colo. Filed March 13, 1909. Serial No. 483,259. (Cl. 152—11.)

1. In an apparatus for inflating pneumatic tires, the combination with a wheel and its pneumatic tire, of a cap fixed upon the wheel hub and including an interior, normally closed chamber in communication with said tire and having an axial opening in its outer end, an interior recess surrounding the same and a cavity corresponding with said opening in its opposite end, a longitudinally bored head fitted in said cavity and having a passage connecting the bore with the interior of the chamber and an integral collar occupying said recess, a washer connected with said chamber covering the joint between the collar and the recess, a second washer similarly connected in frictional engagement with the circumferential surface of the head and a conduit extending outside of said cap, fixedly connected with the head in communication with its bore.

1,016,905. Vehicle Spring. John S. Thiell, St. Louis, Mo. Filed Aug. 12, 1910. Serial No. 576,825. (Cl. 21—103.)

A vehicle spring comprising a series of leaves, said leaves having a zigzag groove in the upper faces thereof, a centrally disposed bolt extending through all the leaves for connecting the same together, said bolt having grooves in the opposite sides of the shank portion thereof, said grooves communicating with the zigzag grooves in the leaves of the spring, and a lubricator cup connected to the end of said bolt for feeding oil through the grooves in the shank of the bolt and to the zigzag grooves, essentially as described.

1,016,906. Tachometer. Curtis Hussey Veeder, Hartford, Conn, assignor to The Veeder Manufacturing Company, Hartford, Conn., a Corporation of Connecticut. Filed March 24, 1911. Serial No. 616,773. (Cl. 73—123.)

1. In an instrument of the character described, the combination of an indicator tube, a casing having a main chamber and a pump chamber communicating with the main chamber and with the indicator tube, an impeller in said pump chamber with its axis vertical, an open ended tube secured at its lower end in the bottom of the pump chamber, a central shaft extended upward through said tube, a sleeve shaft, and means to connect said sleeve shaft to said central shaft above the upper end of said tube said sleeve shaft supporting the impeller at its lower end.

1,016,918. Method of Making Pneumatic Tires. William W. Duncan, Watertown, and Arthur N. Hood, Newton, Mass., assignors to Hood Rubber Company, Boston, Mass. Filed Aug. 22, 1910. Serial No. 578,341. (Cl. 154—14.)

The herein described method of manufacturing pneumatic tires which consists in forming a tire body of fabric and uncured rubber, separately rolling a strip or band of uncured rubber with an embossed surface, applying said strip or band to the periphery of said body, and thereafter subjecting the tire to the "open heat" vulcanizing treatment, substantially as described.

1,016,980. Controlling Device for Electric Motor Vehicles. Elmore W. Bender, Los Angeles, Cal. Filed July 13, 1910. Serial No. 571,704.

1. In combination, a direct current electro-mechanical machine adapted to act either as a motor or generator and an electric motor mechanically connected together, a controller for the direct current machine, a mechanical clutch connected to the direct current machine, and connective means whereby the clutch and controller are actuated simultaneously.

1,016,981. Internal-Combustion Engine. Ray Carmichael, Indianapolis, Ind., assignor to Indianapolis Gas Engine Company, Indianapolis, Ind., a Corporation. Filed Mar. 6, 1911. Serial No. 612,554.

1. An internal combustion engine provided with a fan-shaped combustion chamber, an oscillatory hollow piston operating therein, ignition means in said chamber, means for conveying the combustible mixture into said piston, and valve-controlled ports in said piston for charging the combustion chamber.

1,016,991. Elastic Tire. Carl Herold, Brunn, Austria-Hungary. Filed Sept. 3, 1910. Serial No. 580,288.

In an elastic tire, the combination with the inner rim of an outer resilient rim of greater diameter, a number of strips of fabric broader than and stretched around the said rim and having their protruding borders so plaited in triangular folds and secured to each other as to form with the rim an inwardly open gutter and means for fastening the said borders to the inner rim, substantially as and for the purpose described.

1,017,000. Vehicle Lamp. Joseph A. Joncas, Minneapolis, Minn. Filed May 17, 1910. Serial No. 561,860.

1. In a motor vehicle, the combination, with a frame of brackets mounted thereon, plates having ball bearings on said brackets, and having lock nuts and springs provided on said bolts between said nuts and said brackets, lamps carried by said plates, said plates having laterally extended slotted arms, a rod having its ends connected to said arms in said slots, a steering apparatus and means operatively connecting said rod with said steering apparatus.

1,017,008. Engine. William Riley McKeen, Jr., Omaha, Neb., assignor to McKeen Motor Car Company, Omaha, Neb., a Corporation of New Jersey. Filed Aug. 21, 1909. Serial No. 513,915.

1. In apparatus of the nature described, in combination, a cylinder head having air inlet and discharge passages extending laterally into the head and thence into the cylinder; a central opening for the passage of a piston rod; water chambers intermediate the air passages; an inlet opening into the first of said water chambers; an outlet opening from the last of said chambers; and a raised circular projection adapted to extend into the cylinder, and containing passages connecting the water chambers in series, substantially as described.

1,017,070. Gearing. Alfred Andri, Liege, Belgium, assignor to Fabrique Nationale D'Armes de Guerre Societe Anonyme, Herstal, Belgium. Filed Nov. 17, 1909. Serial No. 528,474.

1. The combination with a gear-set of fixed and movable gear members, and a clutch device of a lever having a fixed pivot, connections between the lever and the gear-set for shifting the movable gear members upon swinging the lever, a second lever pivoted on said lever beyond its axis connections between the second lever and the clutch device, a stationary locking member positioned to be engaged by the second lever, and an operative connection between the two said levers.

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Dealers!!!

The Cash Prizes Offered by MOTOR WORLD in the Used Car Contest

For Your Ideas—How You Suggest the Greatest Success Be Attained—Your Criticisms of Present Methods.

The Cash Prize Used Car Contest is in no sense a literary contest and no article will be judged by the amount of correct English or pure rhetoric with which it is constructed.

The articles may be long or short and "literary style" will not figure in the award. Practical ideas, and preferably plans which have been put into practice and proved true, are what are desired. The policy pursued by the small dealer is likely to prove quite as valuable as that brought to bear by the large one.

How Do You Overcome the Used Car Evil?

How do you keep it from standing between you and the profit you ought to earn through the sale of a new car? That's what we want to know, so

Just Give Us the Facts. We Will Write the Article

if you say so, and put it in shape for publication. Of course, we will print your letter just as you write it unless otherwise ordered, but we are willing to help you put it in good shape if you think we ought to do it.

We want to co-operate with dealers by giving full publicity to the ways and means adopted by them in overcoming the profit-killing influence of the car that is being sold and re-sold to the detriment of new car sales.

The Cash Prizes Are Worth Trying For

But the greatest good will come to you through the exchange of ideas of dealers all over the United States, many of whom doubtless have partially or wholly mastered the situation. It's up to you to help, and your plans may win you one of the following sums of money:

$50 for the best article on
$25 for the second best article on
$15 for the third best article on
$10 for the fourth best article on

How to Handle the Used Car Problem

This Offer Is Open to All

and communications from Motor World non-subscribers will receive the same consideration as those from subscribers. There are no strings to the proposition. We will spend this money for the remedy and we don't care who the doctors are.

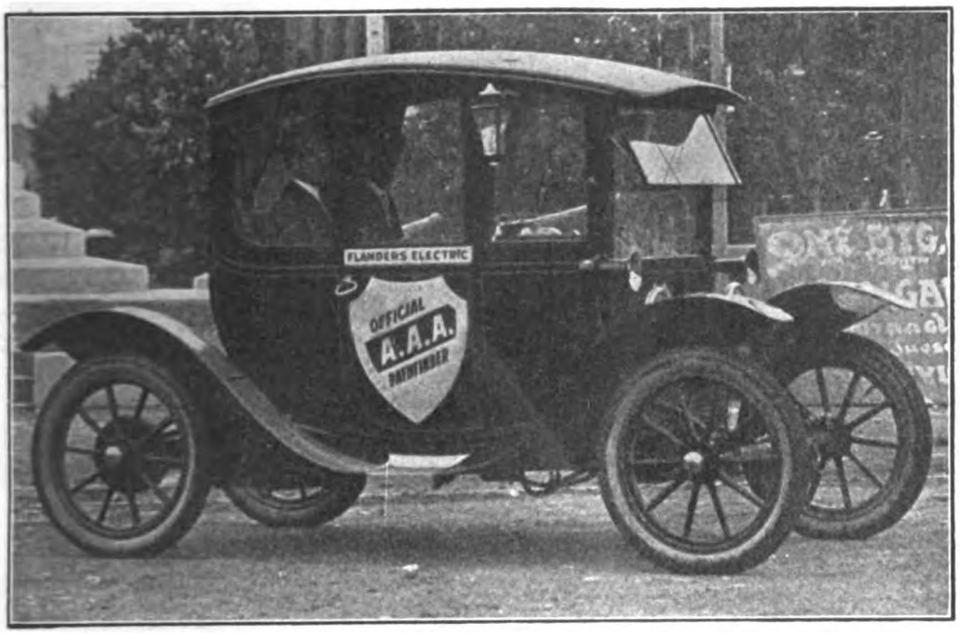
Contest Closes January 2nd, 1913

and on this date the following judges—Carl H. Page, of The Carl H. Page & Co., metropolitan distributors of Chalmers cars; William Colt, of Colt-Stratton Co., Eastern agents Cole cars; and Harry Houpt, general manager American Locomotive Co., manufacturers of Alco Cars and Trucks—will take all contributions into consideration, announcing the winners in Motor World, issue of February 6th, 1913.

We want your co-operation for our mutual benefit and for the betterment of the trade in general. Send us your letter—today.

Address Communications to Contest Editor, MOTOR WORLD, 1600 Broadway, New York

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This is the Car

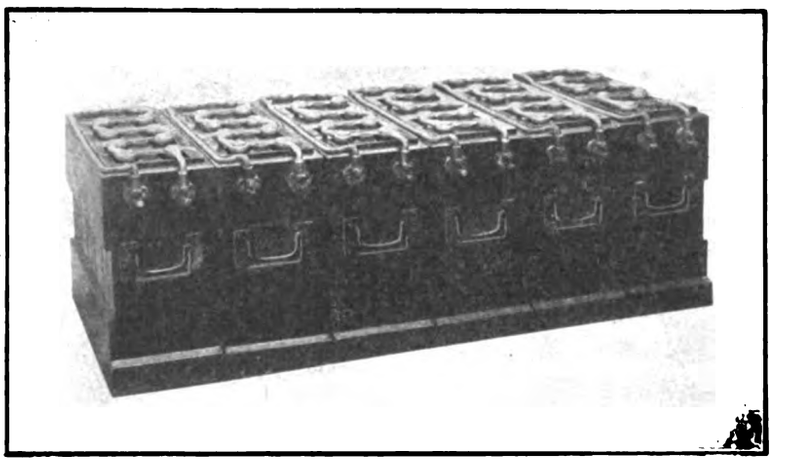
that made the wonderful Path Finding trip for the 1912 Glidden, or National Reliability Tour.

1721.7 Miles

From Detroit to New Orleans

arriving at latter city on exact schedule time.

This is the LBA WILLARD Electric Vehicle Battery



that contributed to the success of this wonderful performance, an achievement never before attempted or considered within the range of possibility for an electric.

It was, by no means, a boulevard trip. Over roads of every description, in drenching storms, through mud and mire, up hill and down, successfully overcoming difficulties calculated to daunt the most powerful gasoline car—the LBA battery propelled the Flanders Path Finder and demonstrated the thorough reliability of the Electric under every condition of service.

Great credit is due to the manufacturers, whose faith in their car was proven well founded, but the supreme confidence which prompted them to embark upon this stupendous undertaking was inspired by their intimate knowledge of the absolute dependability of LBA batteries.

Write us for full information

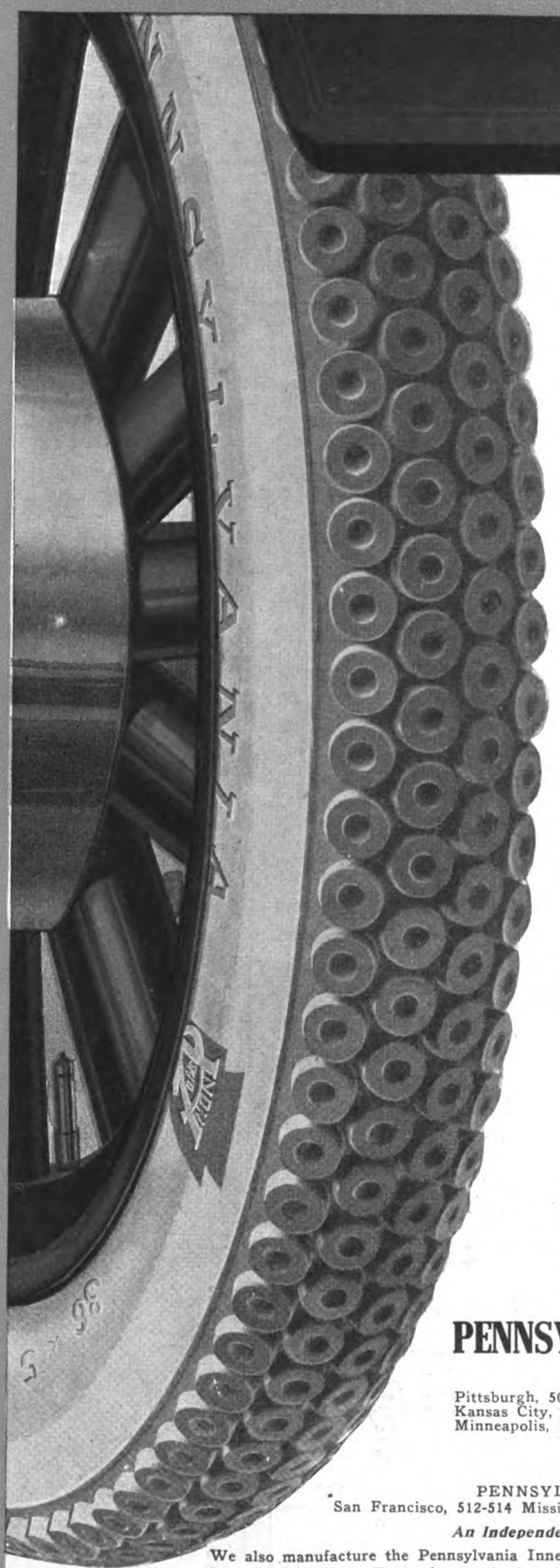
WILLARD STORAGE BATTERY CO.

CLEVELAND, OHIO

New York Branch, 136 W. 52d Street **Chicago Branch, 426 S. Dearborn Street**
Detroit Branch, 1191 Woodward Avenue

Depots in all principal cities in the United States, Canada and Mexico

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Give Your Customers the Big Message!

PENNSYLVANIA Oilproof Vacuum Cup Tires

Oil disease is sure and early death to tires—and it's the oil on garage floors, big city streets and, in many localities, oiled roads that put the tire in the scrap heap before half of its useful life should be spent.

PENNSYLVANIA OIL PROOF VACUUM CUP TIRES are the first and only tires to prove themselves immune to oil infection—and they are also anti-skids of the safest type. Note the vacuum cups on the big illustration.

DEALERS: Here Are Your Selling Points

Long Life Oil Can't Disintegrate Them. Chains Can't Chew Them Up.

Safety Guaranteed to Hold on Slippery Surfaces—Without Chains.

Get in line—now—before the territory is invaded. It's good business.

PENNSYLVANIA RUBBER CO., Jeannette, Pa.

(Re-organized Feb. 1, 1910)

Pittsburgh, 505 Liberty Ave.
Kansas City, Mo., 514 East 15th St.
Minneapolis, 34 South Eighth St.
Chicago, 1004 Michigan Ave.
Detroit, 254 Jefferson Ave.
Cleveland, Ohio, 1837 Euclid Ave.

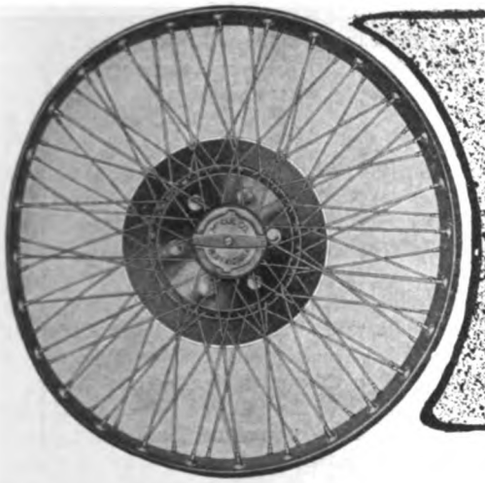
PENNSYLVANIA RUBBER CO. OF NEW YORK
New York City, 1700 Broadway

PENNSYLVANIA RUBBER CO. OF CALIFORNIA
San Francisco, 512-514 Mission St. Los Angeles, 930 South Main St.

An Independent Company with an Independent Selling Policy

We also manufacture the Pennsylvania Inner Tube, the highest grade tube on the market, as well as the famous "503" Inner Tube, the standard medium priced tube, half a million of which were sold last season.

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HENRY FORD Bought THIS WIRE WHEEL MINERVA For His Own Personal Use

70% MORE TIRE MILES

WIRE McCUE WHEELS

It is not alone in tire economy that wire wheels excel, but as well in their ability to make cars more easy riding and more easily controlled.

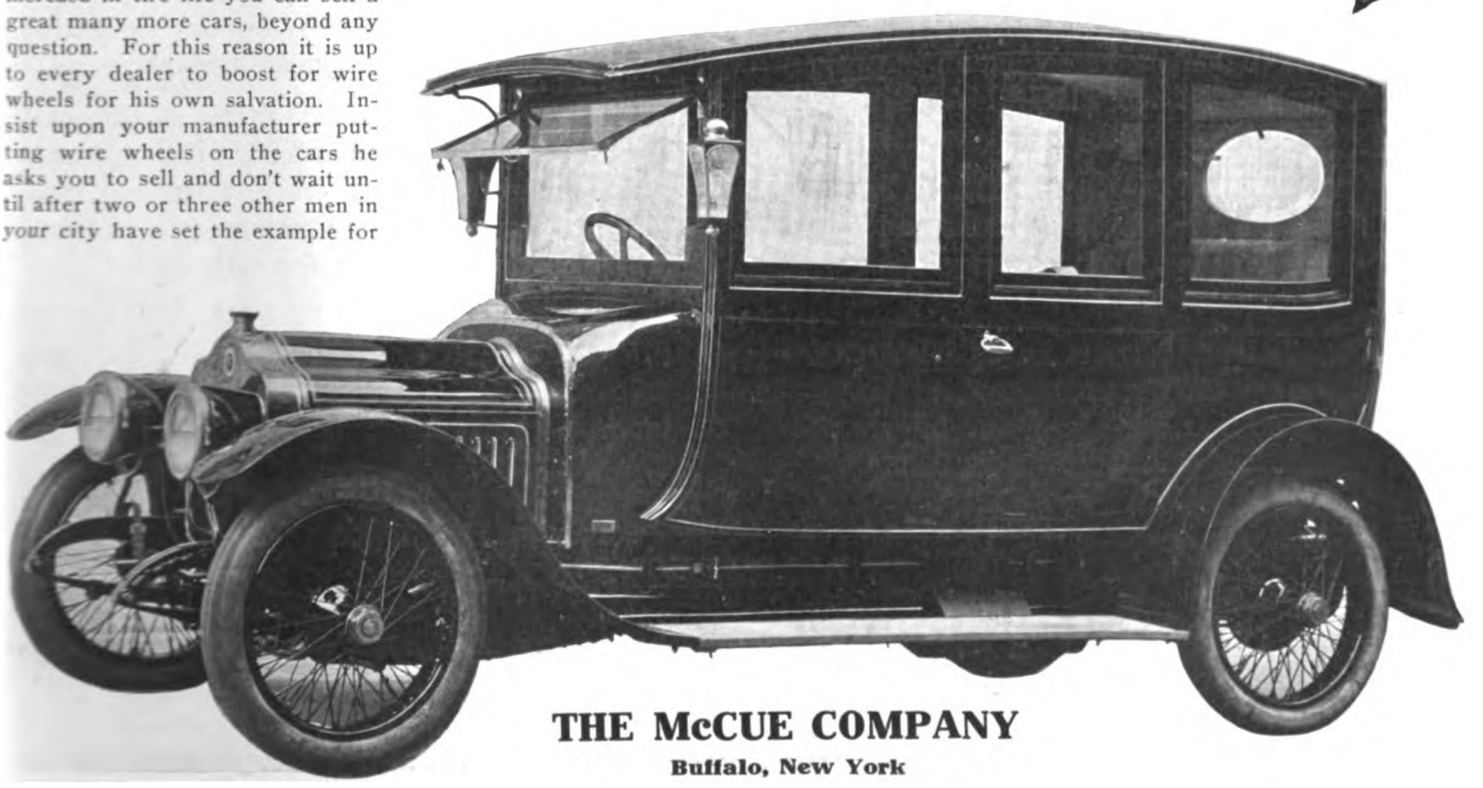
Wire wheels on the big sumptuous Minerva limousine, such as is shown herewith, and which was bought by Henry Ford for his own personal use, mean an added comfort and smoothness that could not possibly be obtained with other than wire wheels.

Of course, the big factor to be considered by every dealer, regarding the question of wire wheels, is that they save tires—an actual six months' test by the English Daimler Company showing an increase of tire life of 68.75% where wire wheels were used as against wooden wheels.

If you can guarantee your prospects such a terrific increase in tire life you can sell a great many more cars, beyond any question. For this reason it is up to every dealer to boost for wire wheels for his own salvation. Insist upon your manufacturer putting wire wheels on the cars he asks you to sell and don't wait until after two or three other men in your city have set the example for you. Our extensive advertising campaign is acquainting the buying public with the fact that wire wheels are superior in every way over wooden wheels. That means that the public is going to demand wire wheels—that means that the man who sells a wire wheel equipped car will have the best chance of dominating the situation in his territory.

McCue axles are so constructed as to admit of the use of either wire wheels or wooden wheels on the same spindle. There is no reason in the world why you cannot have wire wheels on your cars.

For further information, write us.



THE McCUE COMPANY

Buffalo, New York

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"I Have Two Baby Carriages and One Wheelbarrow"

This was one response which came the other day from some letters of inquiry which we mailed to 3,000 readers of THE SMART SET on our subscription list asking if they owned automobiles.

In an effort to become better acquainted with our subscribers, we had been asking them a lot of questions regarding their literary tastes, their magazine preferences, how many magazines they took and what became of the magazines after they had finished with them—in the course of which we found that in the majority of cases THE SMART SET averages more readers per copy than any other magazine, being passed about from hand to hand among the whole family and then loaned to the neighbors.

Then we asked how many of our subscribers owned automobiles. The responses received were so surprising that we think it worth while publishing the results of the inquiry here.

Out of the names selected at random and addressed on the subject, 692 replies were received. Of this number, 473 acknowledged ownership of one car, 63 owned two cars, 27 owned three cars, seven owned four cars, four owned five cars, one owned six cars, two owned eight cars, two owned nine cars—and one subscriber was the owner of eleven cars! Eighty-five per cent. then, of the subscribers who answered our inquiry are automobile owners.

From the 112 who listed themselves as non-owners, the further remarkable information was received that 23 intend to buy cars this year, six will buy some time soon, eight expect to have cars soon, five hope to, 14 are thinking about it, four say they may get one, one wants a car, another has a particular car in mind, and one doesn't need a car as he has two friends who are going to become owners shortly. In all, out of these 112 non-owners, 93 put themselves in the class of possibilities.

Further, of those who already have cars, 18 state that they will shortly need new cars.

The above owned automobiles average 34.3 horsepower. A car of this horsepower may be said to average about $2,000 in cost, so an estimate may easily be made of the amount of money invested by these readers of ours in this particular form of luxury.

When out of a random selection of 3,000 names 673 are found to be in the automobile-buying class—some on a rather extensive scale—it shows an exceptionally high average of readers who are in a position to appreciate and acquire the best in life—and who should prove the very best customers for high-grade advertisers.

The real value of an Advertising Medium to the advertiser depends upon the purchasing capacity of its readers.

Every Manufacturer in the Automobile Industry Should Know These Facts

THEY ARE ABSOLUTELY CONCLUSIVE and reflect with unerring certainty the class of people which constitutes SMART SET circulation.

THERE IS NO THEORY, guesswork or deduction needed to demonstrate what an exceptionally favorable medium THE SMART SET is for successfully exploiting automobiles.

THE SMART SET HAS A LARGE NEWSSTAND SALE in the large cities and towns where the purchasing capacity is greater than anywhere else.

OUR SUBSCRIBERS ARE LARGELY CONFINED to the smaller towns, and it is unquestionably true that our newsstand buyers possess as high and probably much higher purchasing capacity than our subscribers.

THE CIRCULATION of THE SMART SET is at present 85,000 to 90,000 a month. It is a magazine appreciated by smart, cultured, brainy people. It is enjoyed by both sexes.

THIS IS THE CLASS which has made possible the astounding proportions of the automobile industry today. We are selling our magazine to the same people whom you are anxious to make customers for your cars.

THE ADVERTISING PAGES OF THE SMART SET will introduce you to those, who as a class not only own, but have the money to buy automobiles.

THE SMART SET
A MAGAZINE OF CLEVERNESS

offers automobile manuracturers a percentage of purchasing capacity per thousand not surpassed by any other medium in the world.

THE SMART SET, 452 Fifth Avenue, New York

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"The Horn that's Made for the Discriminating"

TUTO HORN

THE TWO TONE HORN

Patented Features.

THE two-tone service features of the TUTO Horn are patented and can be furnished only in our product.

¶ This places the TUTO in a class by itself, making it the only device which does all of the signalling of the motor car in a simple and positive manner.

¶ It provides in the one horn and one button more effective signalling value than can be obtained by the best bulb horn, supplemented by the most expensive one-note electric horn.

¶ Neither of the latter is complete, for the inflexible loud blast of the one-note electric horn is out of place for regular service, making it a nuisance, promoting adverse legislation against all electrical signals, and in addition producing a paralyzing effect where rapid movement is most desired. Also the bulb horn is inadequate for emergencies.

¶ The TUTO Horn overcomes all of the disagreeable features in this complication of signalling devices and inappropriate signal notes.

¶ Remember that the TUTO Horn is the only electric horn that does all of the signalling of the car, that it can be furnished by no other manufacturer, as it is protected by our patents and that it requires no care or adjustment from one season to another.

¶ This makes the TUTO Horn best for standard equipment upon any car.

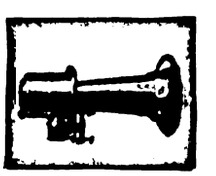


TUTO Horn, $25.00

The Dean Electric Co.

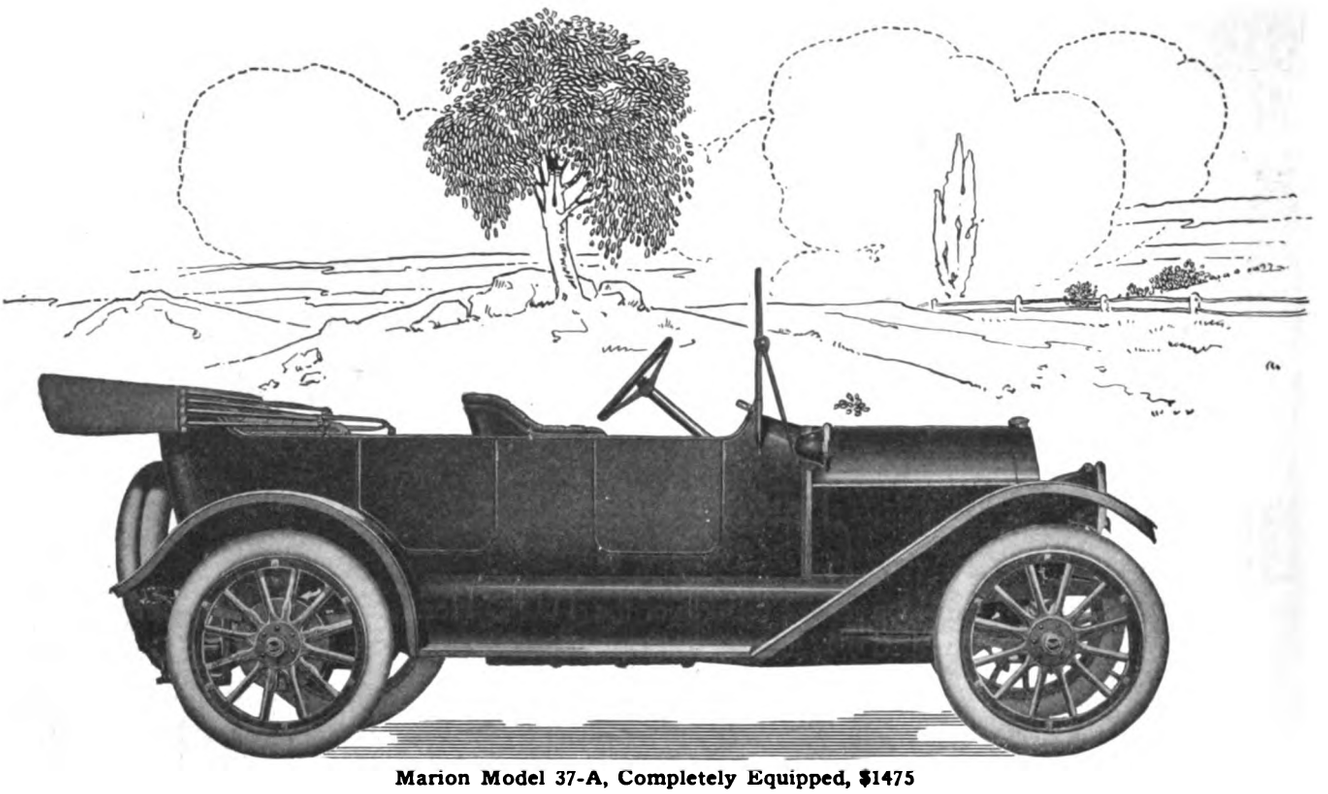
260 Taylor Avenue, Elyria, Ohio

"Look for Dean where Quality's seen"



TUTO-ETTE $17.50

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Marion Model 37-A, Completely Equipped, $1475

1913 Marion 1913

This Splendid $1475 Car Abounds In Unusual Features

Disco Self-Starter
Prest-O-Lite Tank
Warner Speedometer
Concealed Tool Boxes
Robe Rail, Foot Rest
Tire Irons, Tire Kit

Dynamo Electric Lighting System
80-Hour Storage Battery
Ventilating Plate Glass Windshield
Q. D. Demountable Rims, one extra
Mohair Top, Boot, Storm Curtains, Tools, Pump, Jack

FINISH. Rich Brewster green or deep wine color; metal trimmings nickel plated; wood trimmings mahogany; lamps black enameled; fenders, hood, dust shields, baked enamel.

BODY. Five-passenger, big and roomy; graceful lines, flush sides; divided front seat; deep upholstering, hand-buffed leather; center control; all doors open towards front; deep cowl over dash; gasolene filler tube between front seats.

MOTOR. 30-40 horsepower; four cylinders, long stroke, cast in pairs; bore and stroke, 4 x 5 inches; large valves, valve springs enclosed; automatic carburetor, steering column adjustment; dual ignition, magneto and batteries; 3-point suspension; constant level oiling system (circulating).

CHASSIS. Wheelbase 112 inches; pressed steel frame; cone clutch, spring inserts; 3-forward speed selective transmission; shaft drive; front axle I-beam, rear axle double trussed; front springs semi-elliptic, rear ¾-elliptic, imported steel; four double acting brakes, large and effective; strong steering gear; artillery wheels; 34 x 4 inch tires.

Features such as these establish the Marion 37-A as a car of unusual value at such a moderate price. We cannot begin to tell you all about it here but our illustrated folder will give you further information. Write for one.

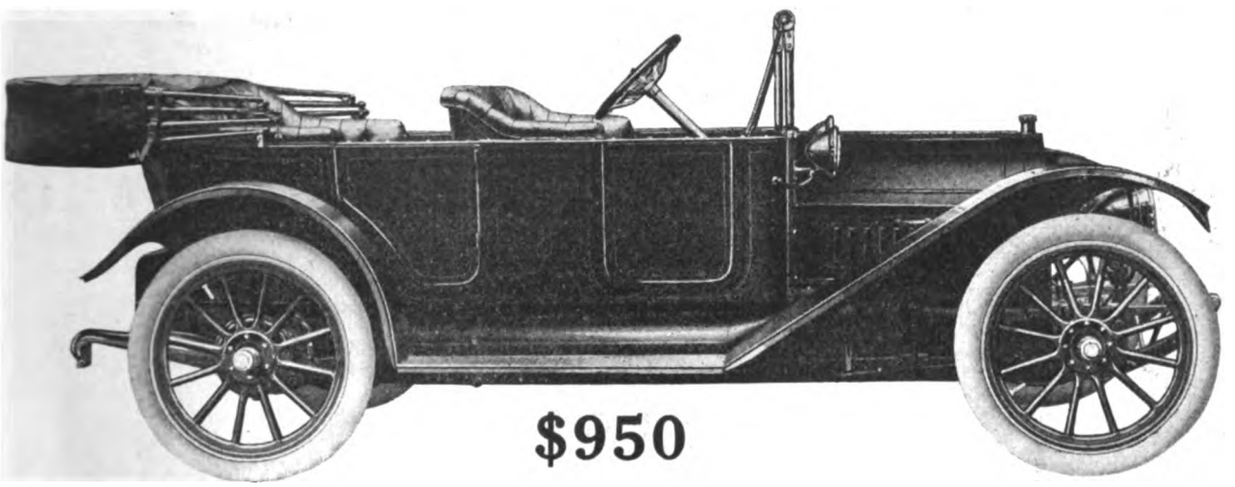
We offer to bona fide automobile dealers the fairest sales agreement ever written. Ask about it.

THE MARION MOTOR CAR COMPANY

918 Oliver Avenue **Indianapolis**

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AMONG the crop of 1913 announcements, The Regal Model "T" Underslung Touring Car, with its added refinements, its equipment, its dollar-for-dollar consideration, its 1912 selling and service record, stands out as a striking example of advanced value and retarded price.



The Regal Model "T" Underslung Touring Car

The Specifications

Read Carefully

Wheel Base, 108 inches; Tires, Morgan & Wright, 32x3½ inches: Selective Sliding Gear Transmission, three speeds forward and reverse; Motor, Four Cylinders, cast en bloc; Bore, 3¾ inches; Stroke, 4½ inches; Dual Ignition; Thermo Syphon Cooling. Equipment includes nickel-plated trimmings; Electric Lights, with option of gas headlights, and Prest-O-Lite Tank; Electric Horn; Tools and Tire Repair Kit. Top, Windshield and Speedometer, $75 extra. Price $950.

Past Record

¶This car was a tremendous seller in 1912 as *all* our distributors and dealers will testify. Its record in owners' satisfaction was most enviable. With the additional equipment and refinements, we predict this car to outsell in any competition. *Your* judgment will sustain *ours*.

Wire or Write

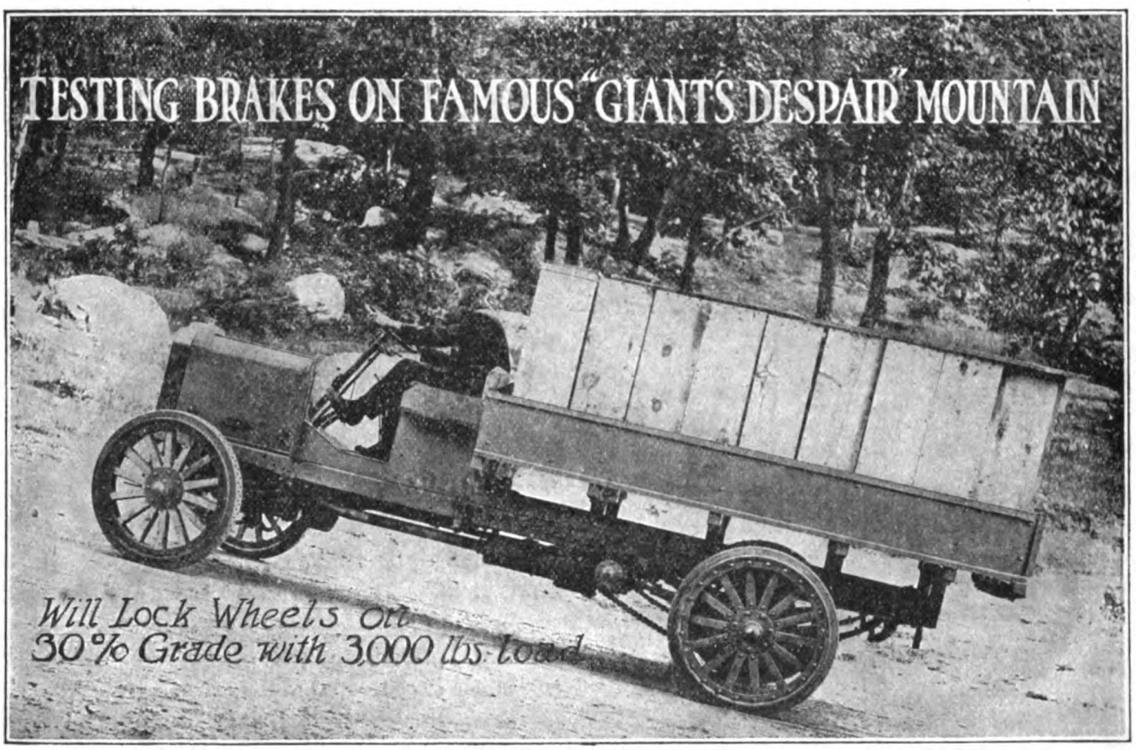
The Regal Motor Car Co. Automobile Manufacturers **Detroit, Mich.**

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SHELDON 1913

ONE TON EQUIPMENT

IS NOW READY



Watch This Space for Further Particulars

Our bulletins give facts worth getting.

SHELDON AXLE COMPANY

WILKES-BARRE, PA.

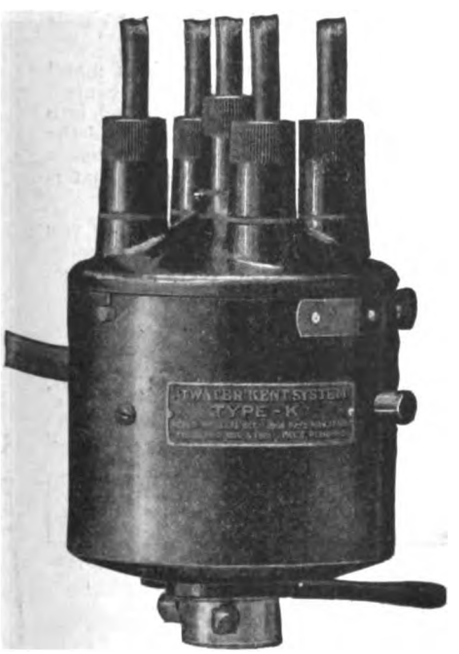
Branch Office
68 East 12th Street
CHICAGO

Branch Office
1215 Woodward Avenue
DETROIT

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The New Atwater Kent Ignition System

With Automatic SPARK ADVANCE



DISTRIBUTORS

New York.....E. J. Edmond Co.
Chicago.....Motor Car Supply Co.
San Francisco, Chanslor & Lyon M. S. Co., Weinstock-Nichols Co.
Milwaukee.....Julius Andrae & Sons.
Omaha.....Omaha Rubber Co.
Chattanooga.....Sanford Bros.
Dallas.....Fisk Co. of Texas.
Denver.....Auto Equipment Co.

Of extreme interest to every motorist

THE Automatic Spark Advance feature of the Type "K" Atwater Kent System is a long stride forward in ignition practice.

With this device, the control of the spark timing is entirely automatic (although the hand lever can be used if desired). This means that the spark is always properly timed to get the greatest possible power from the motor at any speed from three to seventy miles per hour.

No human mind can follow accurately the speed variations in an automobile motor and accordingly regulate the spark setting to get the best results.

The automatic spark control of the Atwater Kent System is more than human in its performance—it is sensitive to the slightest variation in speed—immediate in its response and positive in its action. The operator can forget his spark lever, knowing that his spark is being better regulated than he can do it himself.

The increased safety due to the automatic retarding of the spark for starting is alone more than sufficient to commend it to the modern motorist.

The Type "K" System is especially adapted for use in conjunction with lighting and starting equipment, or as sole ignition in place of the high-tension magneto. We regard it as being fully up to the high standard of merit for which Atwater Kent equipment is known.

Interesting Booklet D and detailed information sent upon request.

Atwater Kent Mfg. Works

4940 Stenton Ave. Philadelphia, Pa.

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Making the Perfect Plug- "Reliance," of course

The perfect plug is one that will not become fouled, will not short-circuit and will not give way even in the intensest heat. If you get all these properties in a plug, you would save money even if you paid double cost.

In the Reliance Magneto Plug these properties are obtained to a greater degree than in any other plug on the market. Built with strict observance to electrical laws, and with a heat defying porcelain produced in our own plant, the results are surprising as well as gratifying, and the cost is only $1.25 each.



Only the superior methods of Jeffery-Dewitt construction make this great plug possible. Every plug is fashioned by experts. Expert potters in our own potteries make the porcelain from imported clays; expert machinists are in charge of our automatics which turn out our metal parts, perfect in every detail. The bushings are case-hardened to withstand any usage, and our supervisors oversee every step of the operation.

More than that—the Reliance Magneto Plug has a central electrode of platinum-iridium, so proportioned that it is practically impossible to short-circuit it with soot.

Ordinary plugs use only a mere tip of platinum, the precious metal which costs two and a half times as much as pure gold. But the central electrode of the Reliance Magneto is of **solid** platinum-iridium baked into the porcelain by a secret process that does away with nuts, gaskets and the like, and absolutely prevents compression leakage. This plug also has a closed end that gives greater stability and makes this the one plug that is **supreme in oily engines.**

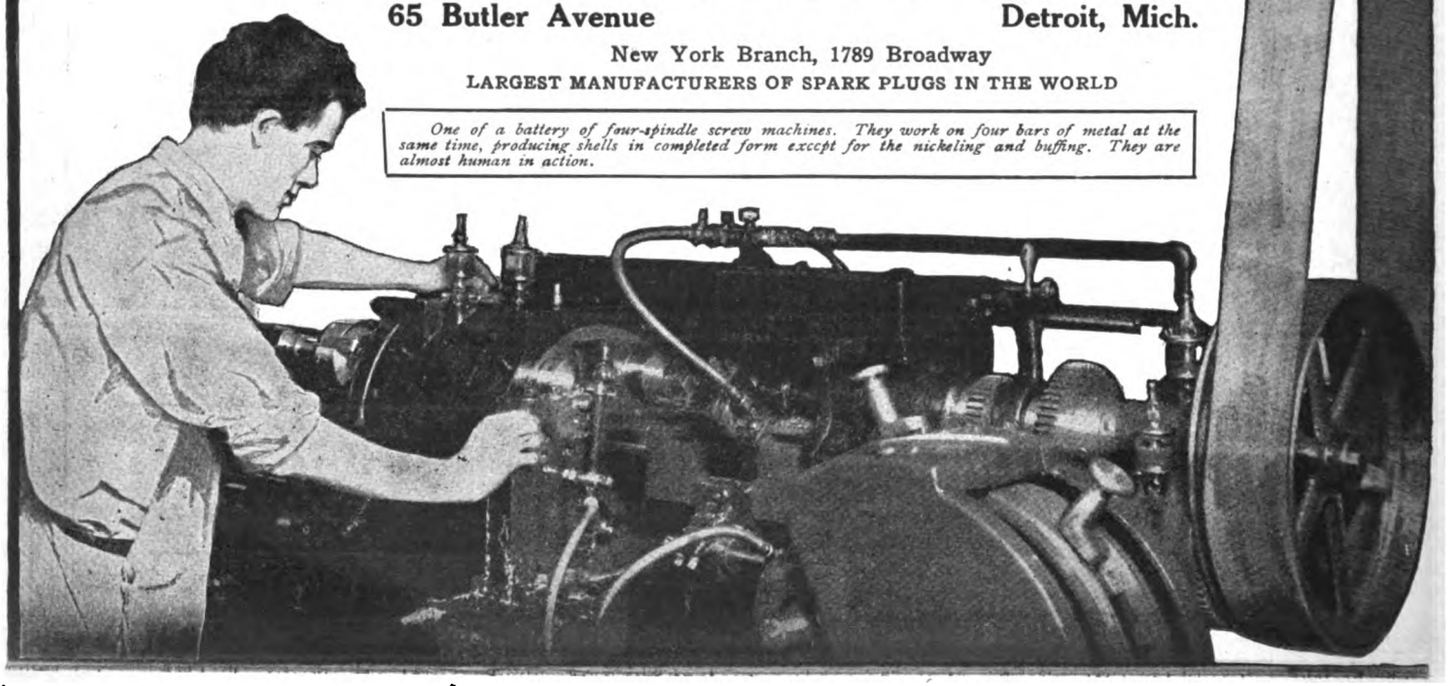
Yet the price remains only $1.25, and if your dealer cannot supply you we will mail prepaid as many as you want on receipt of price. **When writing specify size wanted or make of car.** Remember our ironclad guarantee: *"Your money back or a new plug unless you are absolutely satisfied."*

JEFFERY-DEWITT CO.

65 Butler Avenue **Detroit, Mich.**

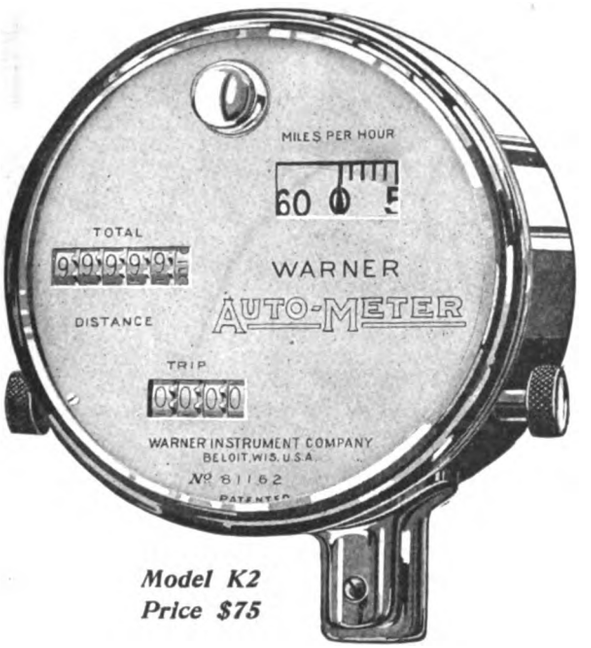
New York Branch, 1789 Broadway

LARGEST MANUFACTURERS OF SPARK PLUGS IN THE WORLD



One of a battery of four-spindle screw machines. They work on four bars of metal at the same time, producing shells in completed form except for the nickeling and buffing. They are almost human in action.

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Model K2
Price $75

Warner AUTO-METER

THE big American automobile manufacturers in 1913 for the first time acknowledge the necessity of equipping their cars with an accurate speed and mileage indicator. After the most exacting series of tests they have virtually made a unanimous selection.

The WARNER AUTO-METER is recognized as the world's OFFICIAL and standard speed and mileage indicator. Manufacturers planning full equipment sought the best indicator They invited tests. It was the survival of the fittest.

The Warner Auto-Meter won. It won although the highest in price.

Practically all the prominent cars for 1913 are equipped with Warner Auto-Meters. The majority of the highest grade cars are Warner equipped. Over 100,000 new cars will be Warner equipped this year.

Examine the speed indicator on your prospective car. It is an indication as to the quality of the whole car.

Priced from $50 to $145. For sale at our branches and by leading dealers all over the world. Handsome catalogue on request.

The Warner Instrument Company

Beloit, Wisconsin

BRANCHES:

Atlanta	Pittsburgh	Los Angeles	Portland, Ore.	Boston	Detroit
Buffalo	Denver	San Francisco	Seattle	Chicago	Kansas City
Cincinnati	Indianapolis	Philadelphia	St. Louis	Cleveland	New York

Canadian Branch, 559 Yonge St., Toronto, Ontario

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A Child Could Sell This Electric Warm Hand Wheel



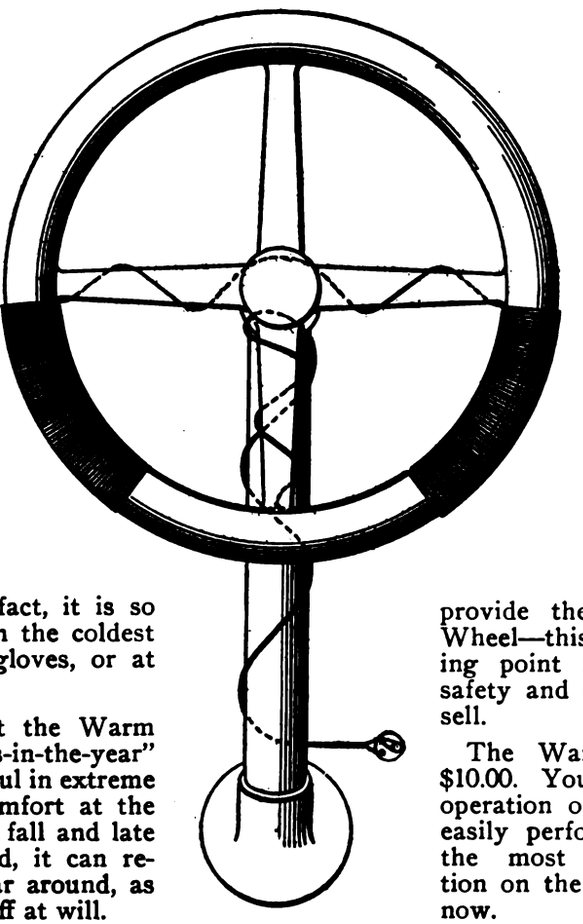
When an Accessory so Desirable is Shown to the Motorists in Your Territory the Value of Expert Salesmanship Drops Down Several Degrees Below Zero

This Warm Hand Wheel, Mr. Dealer, is not a luxury—it is a necessity, and the difference between a luxury and a necessity is simply that one is something that you can get along without and the other something you cannot get along without.

The Warm Hand Wheel is so much a necessity that a child can sell it, and in your territory there are certainly enough of drivers who will appreciate it to make your selling connection with us extremely profitable to you.

The Warm Hand Wheel protects the driver's hands against the coldest kind of weather, giving him comfort and ease in driving through blizzard, snow and sleet—in fact, it is so efficient that it can be used in the coldest weather without the use of gloves, or at most, with very light gloves.

We need not tell you that the Warm Hand Wheel is a "six-months-in-the-year" necessity, for while doubly useful in extreme cold weather it is a solid comfort at the disposal of the driver in early fall and late spring—in fact, when installed, it can remain upon the car all the year around, as the heat may be turned on or off at will.



The factor of safety incident to the use of this device is too great to overlook. Many of the steering accidents occurring during the winter months are due to the sudden cramping and stiffening of the hands—with the Warm Hand Wheel this danger is entirely removed.

We assure you that if you will install just one of these wheels on your own car, you will attract the buying interest of every man in your vicinity who drives. This fact cannot be discounted.

It needs only to be demonstrated to be appreciated.

Ask the manufacturer whose cars you handle to provide them with the Warm Hand Wheel—this will be an added car selling point for you and it will mean safety and comfort to those whom you sell.

The Warm Hand Wheel sells for $10.00. Your commission is liberal. The operation of installation is rapidly and easily performed. In fact, it is today the most attractive dealer proposition on the market. Get your territory now.

The Warm Hand Steering Wheel Company 527 Fifth Ave. NEW YORK

Patented April 23, 1907
Patented Feb. 11, 1908
Patented April 2, 1912
} Other patents pending.

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COMING!!!

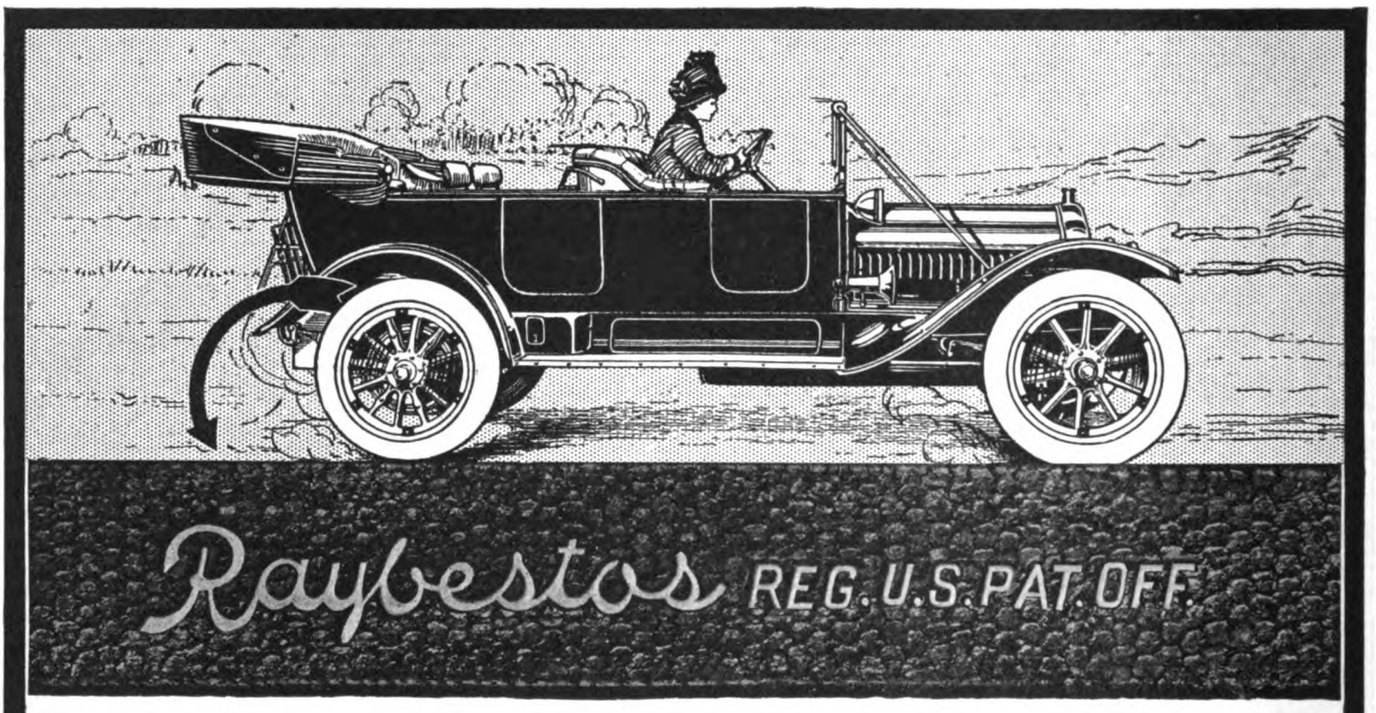
NEXT WEEK

Our Four Page Insert With a Rim Story That Is Going to Be Well Worth Reading.

STANWELD RIMS

THE STANDARD WELDING COMPANY
CLEVELAND

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MAKE YOUR AUTOMOBILE SAFE

Do you realize that quick-acting, positive brakes are the main factor of safety in any car? On the hills, in traffic, at railroad crossings—your life and the lives of others depend on the promptness with which you apply the brakes and *their* ability to *hold!*

TRADE MARK
Raybestos
REG. U.S. PAT. OFF.

Makes Every Car a Safe Car

This is the original asbestos lining. It grips and holds with a bull dog grip. Slightest pressure controls any automobile on the steepest grade *if*—the brakes are lined with RAYBESTOS.

Buy It From Your Dealer or Garage

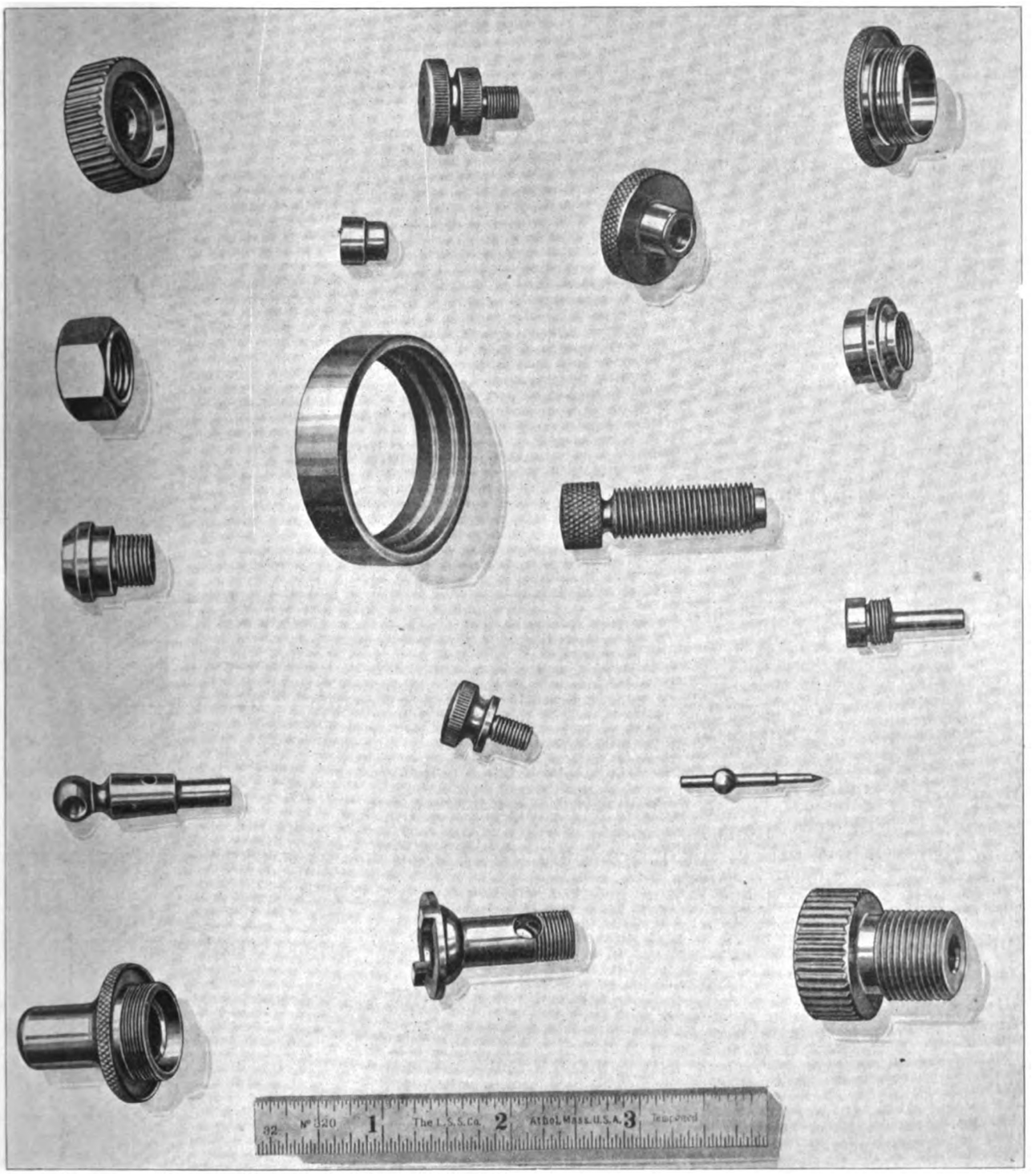
Sold by all first-class dealers. Comes in all widths. Attached without trouble. Don't accept "cheap" inefficient imitations of genuine RAYBESTOS. The name "RAYBESTOS" is stamped in every foot of the lining. For safety's sake *demand* it!

THE ROYAL EQUIPMENT COMPANY

436 Housatonic Avenue **Bridgeport, Conn.**

We also make Duplex and Raymond Brakes and Gyrex, the Mixer

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These Are Parts for Several Well Known Carbureters

They were made for people who wanted better parts than they were getting before coming to us, and they got them—we made them to these specifications, and what is more, to their satisfaction.

In any line requiring milled or duplicate parts we can give you similar illustrations of the value of Acme Screw Making Service.

You'll find 200 other jobs made for satisfied customers in the "Trades Book." It's free.

THE NATIONAL-ACME MFG. CO., Cleveland (Sixth City)

Automatic Screw Machines and Their Products

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Knox

MARTIN TRACTOR



Maximum Carrying Capacity
Minimum First Cost
Minimum Maintenance
Minimum Turning Radius

What It Is

Not a Theory But a Proven Success in a Year's Gruelling Work. Many in Successful Operation. 5 to 10 Ton Capacity. Full Details Explained in Tractor Catalog. Send Today.

A motor unit that may be attached to any heavy vehicle designed to be drawn by horses; the combination making a five-wheeled motor-drawn vehicle.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO EXCESSIVE COST OF RUBBER TIRES. Wagons have been doing good work for many years on steel tires and there is no reason why they will not continue to do so when drawn by the tractor; the heaviest part of the load is always carried on steel tires.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO EXCESSIVE VIBRATION ON STIFF SPRINGS. All working parts of the tractor are carried on springs as resilient as those of a pleasure car.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO SUDDEN STARTING OR STOPPING OF HEAVY LOADS. The cushioning of the shock between the engine and the load is one of the most important advantages gained, (fully explained in catalog).

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO NEGLECT ON ACCOUNT OF INACCESSIBILITY OF PARTS—all parts of the tractor being more accessible than on a touring car.

IT SAVES HEAVY MAINTENANCE CHARGES due to frame twist. The tractor accommodates itself to all road unevenness.

The single front wheel can be turned at 80 degrees angle, enabling the driver to back to any position or turn completely around in the narrowest street.

A Knox Martin Tractor costs less than a two-ton truck; has a capacity of 5 to 10 tons.

KNOX AUTOMOBILE COMPANY (Tractor Department) Springfield, Mass.

New York – BRANCHES – Chicago

AGENTS — The Knox Martin Tractor Is the Greatest Proposition in the Commercial Field Today. Fully Protected by Patents.

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TIMKEN
TAPERED ROLLER BEARINGS

Keeping Down Cost of Commercial Car Maintenance

TIMKEN TAPERED ROLLER BEARINGS save maintenance cost. That is due to the following significant facts:

They carry the heaviest loads. They meet the greatest "end-thrusts." They offer the longest resistance to wear.

And when minute wear comes—as it must in any moving parts—it is entirely taken up by adjustment with no sacrifice of the original characteristics of the bearing.

Perfect Adjustment All-Important in Keeping Down Expense

It's at the very foundation of Commercial Car efficiency.

The car must pay interest on the investment.

Replacements cost money.

Non-adjustable bearings when they wear, must be junked—nothing can save them.

You can't even use them at all without additional bearings to meet the tremendous end-thrusts of commercial car service.

Timken Bearings save you that expense.

Timken Superiority Due to Principles of Design

It can easily be demonstrated in theory.

It is demonstrated every day in practice—by actual service under all conditions.

A roller carries greater weight than a ball because its supporting surface is a line instead of a point.

The tapered rollers of Timken Bearings enable them to meet end thrusts as easily as vertical loads.

They can be adjusted because of their conical shape.

By simply bringing cup and cone more closely together.

This adjustment is perfect because it sacrifices none of the original principles of the bearing.

It's Worth While to Understand the Importance of Bearings

This is clearly brought out in the Timken Primer No. T-1 "On the Care and Character of Bearings." It tells how bearings are made, how they are used—all about them. Write for a free copy.

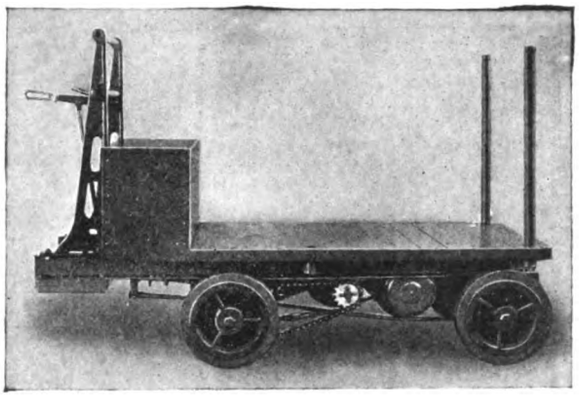
The Timken Roller Bearing Company

Canton, Ohio, U. S. A.

The only axle manufacturer licensed to make automobile axles equipped with Timken Roller Bearings is the Timken-Detroit Axle Company

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Read What Satisfaction Diamond Chains Are Giving on This Truck



Several years ago, the Automatic Transportation Co. of Buffalo began using Diamond Chains on their standard storage-battery-driven freight-handling trucks. Recently this firm commented as follows upon the performance of the Diamond Chains which they had purchased:

"We are very glad to state that these chains are giving perfect satisfaction under the severe strain to which they are subjected in handling freight at many railway and steamship terminals. Frequently the trucks are required to haul their capacity of from two to four thousand pounds up grades ranging from twenty to thirty-five per cent. We had no trouble with the chains."

What Diamond Chains do here they will do elsewhere. Nickel steel rivets and special steel side bars, and precision in machining and heat treatment assure a capacity and durability on which you can place absolute dependence.

We make the types and sizes to cover every vehicle requirement and are always ready to offer helpful suggestions to designers of transmissions. Ask for book on "Chain Transmission of Power."

Look for the
TRADE ◇ MARK

DIAMOND CHAIN & MFG. CO.
150 W. Georgia St., Indianapolis, Ind.
CAPACITY 8,000,000 FEET PER YEAR
SAMPLES SUBMITTED

(135)

Mr. Automobilist:

Your tire maker is very anxious to impress upon you the importance of

Tires Inflated to the Right Pressure

He insists that this is tire economy and

Saves You Money

How do you know what pressure you have in your tires? A

SCHRADER
UNIVERSAL
Tire Pressure Gauge

(Trade Mark Registered in U. S. Patent Office)



(Patented March, 1898—Other Patents Pending)

will tell the exact pressure in your tires at any time, day or night, by simply holding this Gauge to your Valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the Gauge can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the Indicating Sleeve can be pushed back into the Gauge with your finger. No catches or snaps to operate or get out of order. This Gauge is 2½ inches long over all, short enough to apply easily to the smallest diameter of wheel and can easily be carried in the vest pocket or the change pocket of your trousers.

Price $1.00 Each
Ready for Delivery Now

Guaranteed Simple and Absolutely Accurate

Can be obtained from all tire manufacturers and the dealers, or

A. SCHRADER'S SON, Inc.
28-32 Rose Street New York City

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THINK THIS OVER

very carefully and read it twice, if necessary.

Is there any part of an automobile engine, or any other gas engine, that is more important to its efficiency than a Valve?

Your engine leaves the factory running smoothly and sweetly - tuned up to its highest power. Perhaps the valves pit—warp go out of shape fail to hold compression. Then the power diminishes, and what can be more aggravating to the driver, who has known the fullness of the pulling power of his motor, than to have it grow less and less?

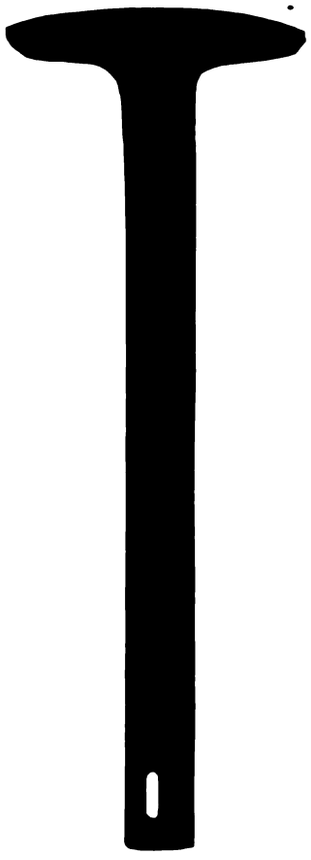
You cannot slight this part by putting in an inferior product—valves that will give trouble, or even break from inexperience in their manufacture—valves of unsuitable material, not suitably heat treated.

Too much is at stake, and a slight extra cost at the outset, which is the exception, may save you many times over a probable later expense.

This Company, with the experience of many years as a guarantee, will furnish you with properly made valves, of the materials best adapted to your requirements.

Not only QUALITY, but efficient SERVICE is a factor—surely there is a satisfaction in getting the kind of work you want—when you want it.

THE ELECTRIC WELDING PRODUCTS COMPANY
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Twitchell

POSITIVE LOCK STOP

Air Gauge

With it you can get more mileage out of the Tires, because you can always keep them at right pressure.

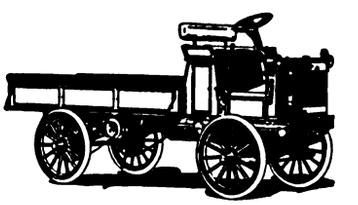
The Twitchell Gauge is Tire Insurance for a dollar—Order one from your dealer or from us direct.

THE TWITCHELL GAUGE CO.
1256 Michigan Ave. CHICAGO, ILL.

Sanford

No manufacturer has ever offered to dealers a more remarkable proposition than we offer

Chassis with Driver's Seat and Dash $1660



Stake or Express Body $1750

A one ton truck built by specialists in one ton trucks—4 cylinder, 30 h.p., water cooled unit power plant, 3 point suspension, with clutch and fly wheel enclosed in oil tight aluminum housing, 4 speed selective type transmission, heavy axle and spring suspension.

Sanford Trucks are remarkably accessible in every part, in every assembly and in the entire assembly. A motor truck to be permanently popular must be lastingly good. Sanford Trucks are built lastingly good, and are therefore permanently popular.

Reliable agents write us for territory.

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SYRACUSE, N. Y.

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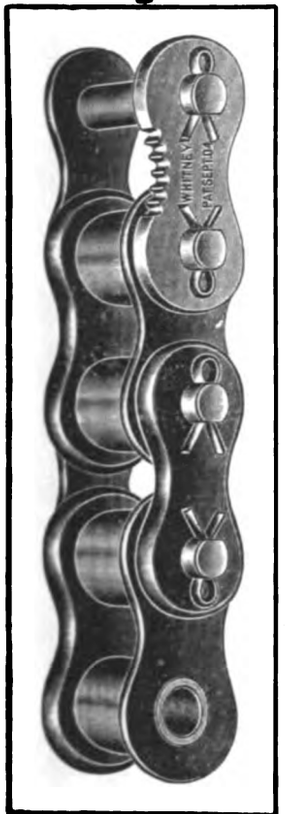
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Made in all types for all standard rims

Federal Tires are supplied through leading dealers everywhere. An interesting tire book mailed to all who write.

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Branches and Agencies—*New York, Boston, Chicago, Kansas City, Minneapolis, Denver, Indianapolis, Columbus, St. Louis, Louisville, Omaha, Little Rock, Atlanta, Los Angeles, San Diego, Pasadena, New Orleans, Portland, (Federal Rubber Manufacturing Co. of Texas — Dallas, Houston, San Antonio.)*



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Are Used by the Leaders

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The "Whitney" Cotter Detachable Chain has made for itself a record, which no other detachable type has approached. The shortening, lengthening or repairing is a simple matter, as the chain can be easily separated at each link and parts removed or inserted without the use of any special tool. It is therefore the Most Practical Chain for Motor Vehicles.

When making replacements insist on a "Whitney" Detachable.



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Have you considered the important advantages of using the American made New Departure ball bearings in your new models?

It is a significant fact that most manufacturers of motor cars have done so and after testing them out, have contracted with us for their requirements.

Take a short cut to a quick discussion of your bearing problems by sending us your blue prints and data. You will receive by return mail our catalogue-treatise, written by our staff of engineers. This will be followed quickly by a letter from our chief engineer frankly stating the result of his study of your bearing requirements, with a view to securing maximum efficiency at minimum installation and maintenance cost.

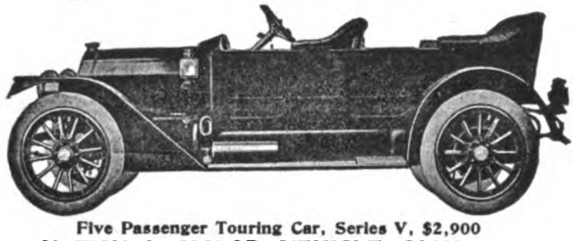
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All models electrically lighted and fully equipped.

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Touring Car and Roadster Types. 44 h.p. 6 Cylinders. Unit Power Plant, 3-Point Suspension. 122 in. Wheel-Base. 36 x 4 Tires.

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The Marmon "32"

32-40 H.P., 120-inch wheelbase, self starting, dynamo lighting, with body types to meet every requirement and corresponding equipment —$2,850 to $4,100.

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4 Speeds Forward
4 and 6 Cylinder
Self-Starter

KLINE CAR

Hills No Terror
Speed to Burn
Economical

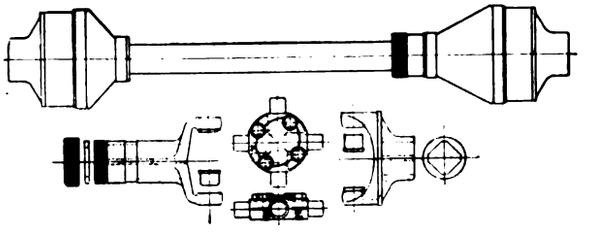
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Factories: Richmond, Va., York, Pa.



We supply single universals or drive shafts complete as shown. Forgings special analysis steel heat treated. Note extreme simplicity, insuring long life.

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Warner Steering Gears, Mr. Manufacturer, are your best pledge of Safety, which means a Big Asset in your business. You are justified in using them by our eight year old reputation for building the highest grade steering gears produced.

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Grand Prix de France
for Light Cars and
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Write for September Bosch News

BOSCH MAGNETO COMPANY
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Remy Magneto

Exchange Your Old Magneto for a New Remy

IT will cost you practically no more than what you will be forced to pay out for constant repairs on your present ignition system. A new Remy will give your car new life. Here is our exchange proposition:

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Allowance made for any make of Magneto.

Remy Electric Company
Anderson, Indiana

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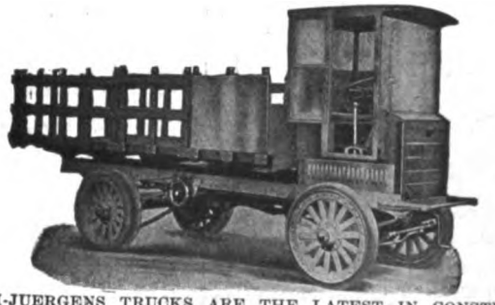
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The ball bearings are made of especially analyzed, extraordinarily dense crucible cast steel, that combines uniform hardness with toughness from center to surface. All balls show a wonderfully great crushing strength and any ball showing the slightest defect is promptly rejected.

In specifying Schafer Ball Bearings, the manufacturer of the car is assuring the ultimate buyer of one point of quality that goes to make a good automobile still better.

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In All the World No Car Like This

Ten successful seasons—the wonderful long stroke motor—added improvements and refinements give this wonderful car the greatest value ever offered for $1800. Read the list below of the most notable features of the

Dreadnought Moline M-40

10 inch more wheel base (now 124)
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Improved Steering Gear
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The noticeable features of this type of BENZ cars include the offset crank shaft, smokeless oiler, and SILENT CHAINS instead of timing gears.

The BENZ Carrosseries are noted for their beautiful lines and thorough comfort.

To those desiring AGENCY of this car the Benz Company will offer special terms. We want RELIABLE, ENERGETIC agents to further our interests for both BENZ pleasure cars and BENZ-GAGGENAU trucks, which today stand recognized by those who know, as the leading 6-ton truck. Wire or write us, no matter where you are.

Our PRICES compete with LEADING AMERICAN makes.

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ANNOUNCEMENT

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Touring Car	600
Town Car	800

These new prices, f.o.b. Detroit, with all equipment. An early order will mean an early delivery. Get full particulars from Ford Motor Company, Detroit, Mich.

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Complete line of commercial vehicles—all type bodies—special bodies designed. KisselKar Trucks have excess capacity, reserve power. Low fuel cost—sizes to give economical service under any conditions.

1500 Lbs., 1, 2, 3, 4, 5 Ton Trucks

KisselKar Service keeps down operating costs. Write for special truck catalog.

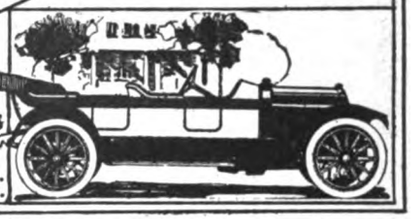
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Nyberg

THE TOURABOUT LINE

Four-40, Tourabout, 128-in. wheel base . $1450
Six-45, Tourabout, 136-in. wheel base . . . $1750
Six-60, Tourabout, 138-in. wheel base $2000

Complete specifications will be sent on request.



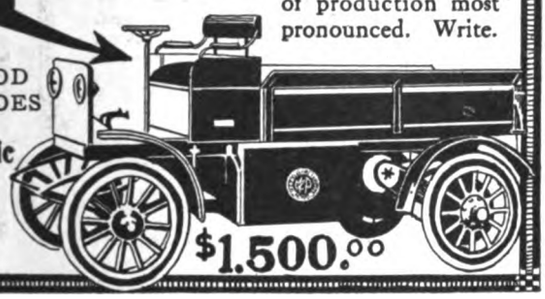
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MADE TO MAKE GOOD AND IT DOES

M & P Electric Vehicle Co.
Franklin and Dubois Sts.
DETROIT, MICH.



$1,500.00

Hupmobile

Long-Stroke "32" Touring Car
$900 F. O. B. Detroit

Motor 3¼ x 5½ inches; four cylinders; Bosch magneto; three speed sliding gears; tires 32 x 3½ inches; 106 inch wheelbase. Equipment includes windshield, gas headlights, generator, oil lamps, tools and tire repair kit.

Roadster body on same chassis and with same equipment, $900 F. O. B. Detroit.

Runabout—$750
F. O. B. Detroit. Same power plant as World-Touring Car. Wheelbase, 86 inches. Equipment of top, windshield, gas lamps and generator, oil lamps, horn and tools.

20 H. P. Models

Roadster—$850
F. O. B. Detroit. Same chassis and power plant as World-Touring Car. Wheelbase, 110 inches. Same equipment as Runabout, also highly finished steel box on rear deck for tools and accessories.

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F. O. B. Detroit. Same power plant as World-Touring Car. Wheelbase, 86 inches. Electric headlights, electric and oil side and tail lamps, folding dash seat for third person. Rear tires, 31 x 3½ inches. With 110 inch wheelbase, $1150.

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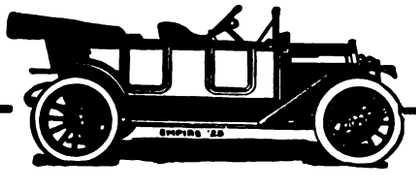
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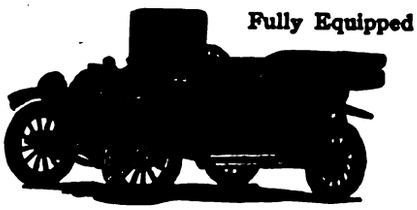
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Fully Equipped

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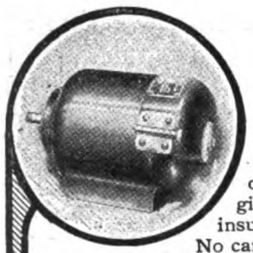


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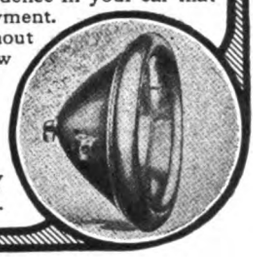


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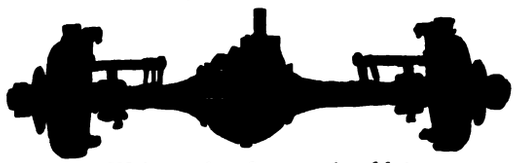
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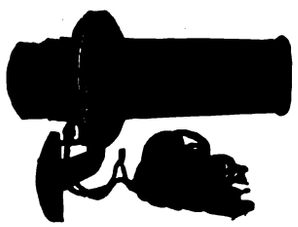
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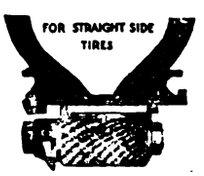
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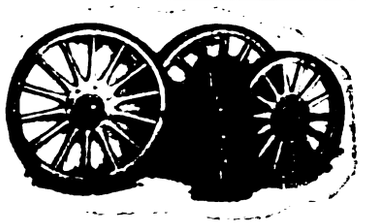


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One Passenger to 16 Tons Capacity

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Out Gears of Quality
Complete Differentials

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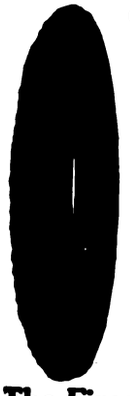


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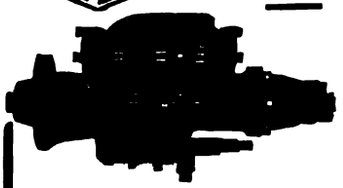
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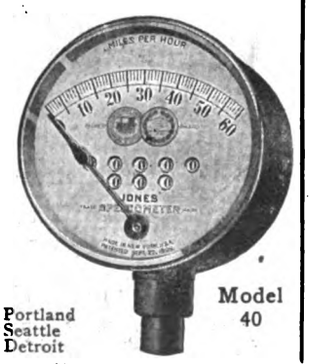
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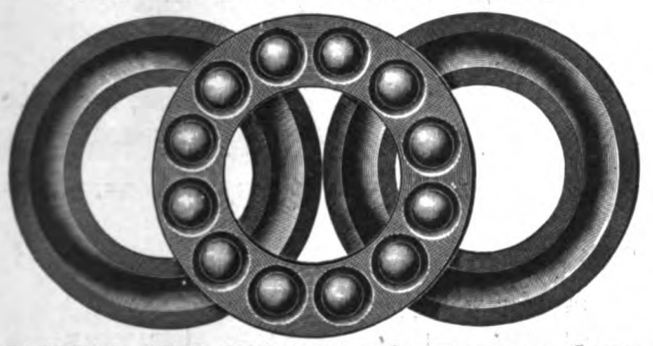
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$1,675	$2,150	$2,750

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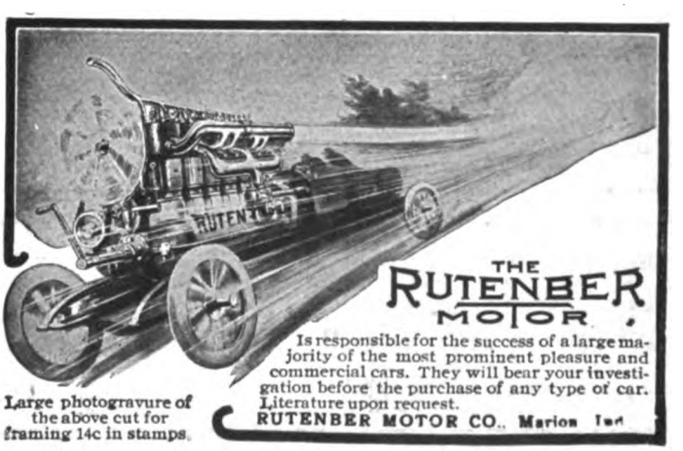
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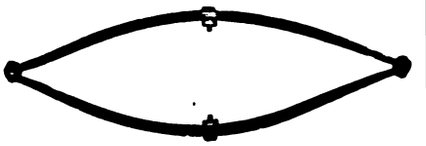
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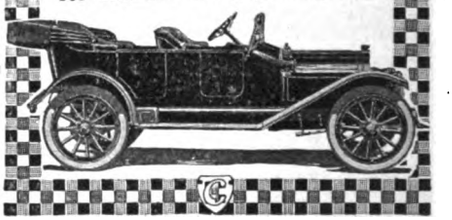
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Great Ease of Riding — Carburetor Dash Adjustment
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forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.

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Is "As Dependable as Niagara"
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This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)
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The ONLY gas tank that when empty, can be immediately exchanged for a full one, ANYWHERE and ALWAYS.



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MANUFACTURING COMPANY

Buffalo, New York

for the very highest grades of brass goods that can be produced at prices that are right.

Folding Auxiliary Seats, Windshields, Bumpers, Wheel Pullers

and the one

Gasoline Engine Starter

that is

POSITIVELY SURE TO START
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ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

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The more miles from a tire the better your investment.

The seventeen years of experience behind the making of Kelly-Springfield Tires enables us to put more miles into them.

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20 Vesey Street, New York
Branch offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Seattle, Buffalo, Cleveland, Baltimore, Washington, Atlanta, and Akron, Ohio.
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GARAGE MODEL repairs three tubes and two casings at a time. Cheapest and best on the market. Get our special selling plan. Portable model for individual owners which will please your customers. List price, $12. Manufactured by

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The most economical car you can buy at any price. The Metz will run from 28 to 32 miles on a gallon of gasoline, over 100 miles on a pint of lubricating oil, and from 8,000 to 10,000 miles on a set of tires. You can secure exclusive sale of these cars in your territory. Book "B" mailed free on request.

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Inner Tube Repaired

quickly—easily—permanently by the

Imperial Vulcanizer Repair Kit

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One ounce of gasoline and a little specially prepared rubber—with these the Imperial gives you practically a new inner tube in 15 minutes.

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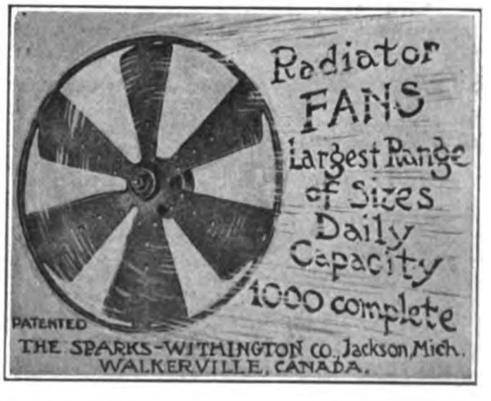
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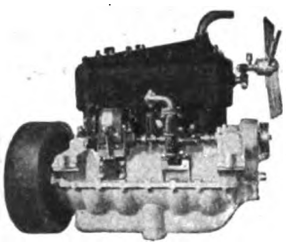
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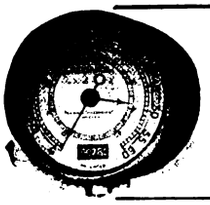
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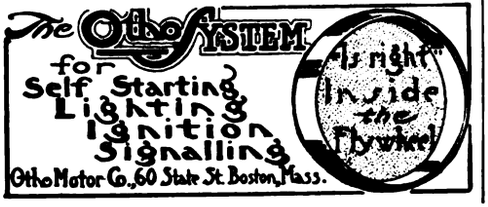
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"The Speedometer of Quality"
Special features that eliminate speedometer troubles. Send for the booklet.
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Tones down headlights for city driving and foggy nights an auto necessity. Price 75c. per pair. Sell like hot cakes. Dealers, secure the agency quick.
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The Great Anti-Skid DEVICE

Nine-tenths of all accidents to automobiles are caused by skidding or slipping.

Either you skid into the "other fellow" or the "other fellow" skids into you.

No matter how careful a driver you may be, you cannot prevent skidding or slipping on wet, muddy snow-covered roads or on icy, slippery greasy pavements unless you equip your car with Weed Chains.

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An absolute necessity on both rear wheels and if you want to know what real steering steadiness means put them on the front wheels too.

For your own safety—for the safety of the public, fully equip your car with Weed Chains. Make it your business to get a set today.

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Standard Bearings
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75% Increase in Tire Efficiency
That's what the INNERSHU accomplishes. It's a tough, durable, rubberized fabric formed permanently to tire shape. Ask for circular.
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A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

THE FORD STARTER will start your motor with one turn of the crank in the coldest weather. It saves 25 per cent. of your gasolene and avoids carbon trouble by making a perfect mixture. Fits any car, put on in 15 minutes. Price, $10.00. FORD STARTER CO., St. Joseph, Mich.

WANTED—Man to take charge of enameling department of large automobile plant. One who thoroughly understands dipping and baking of fenders, hoods, etc. Box No. 220, care Motor World.

WE ARE OPEN to take up any suitable line for the cycle, motor, or general hardware trade on a commission basis of 5%. Established eight years. Best references. A. HERMANN & CO., 26 Hamilton Road, Highbury Barn, London.

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AN UNUSUAL OFFER.

Bosch Magnetos $25.00
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These are standard goods and we only have 300. Send your check before they are gone.

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SMALL OFFICE to rent in best automobile building in New York. Privilege of show room and moderate storage space. CONOVER & ROBINSON, 250 West 54th St., New York.

FOR SALE—Auto delivery wagon; panel top; first-class condition; $225. 740 W. 47th St., Chicago, Ill.

FOR SALE OR TRADE—4 pass. Mors. Autocar runabout, 35 H.P. Beaver marine motor, 4 H.P. stationary motor, 2 H.P. electric motor, 125 cycles, 6 foot show case. Want power hack saw and press. C. H. MINCHIN, Greenwich, Conn.

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The bigger it gets the better for YOU and for US. For you—because it gives a greater volume of opportunities for trade. For us—because—well, the answer's too easy to this!

Look these three pages over carefully. You won't be on to your job as a dealer if you don't at least do that much.

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FOR SALE—3½-ton Couple-Gear battery truck (used); good condition except battery, which requires some renewals. Price $1,000. Also 40 ampere G. E. rectifier, $150. B. F. AVERY & SONS, Louisville, Ky.

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DO you wish to better your position? If your character and ability will stand investigation we can place you in any occupation, anywhere. Enclose 50c. for registration with references. Fee returned if unsuccessful. Address DEPT. F, BLUE LIST EMPLOYMENT EXCH., 250 West 87th St., New York City.

FOR RENT—Factory Building, Syracuse, N. Y.; 18,000 square feet floor space, on best street in the city; engine, boiler and shafting complete. Two elevators, city water, gas and electric service, and equipped with sprinklers. Use of railroad siding. Electric cars pass office door. Apply GEORGE N. COMLY, 1816 West Genesee St., Syracuse, N. Y.

SCORED CYLINDERS repaired, $12. No enlargement of bore—no need for new pistons and rings. Send piston with cylinder. Absolutely reliable method. References, testimonials, and full details on request. WATERBURY WELDING CO., Waterbury, Conn.

Always read Dunk's advertisement.
"It Pays to Pay Dunk."
$35.00—Sterling Wind Shield—$7.40.
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PEERLESS EXTRA FINE BLACK BAKING JAPAN.
Bakes to either a high gloss finish, egg-shell gloss or dull finish, on lamps, radiators and fenders. Will not crack, chip or peel.
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TWO AND FOUR cylinder motors, $50 to $175. Chain drive chassis, $35. Transmissions, $10 and up. W. D. PECK, 18 Sawyer Ave., East Orange, N. J.

KENNEY NUT LOCK. Won't jar off. Holds tight wherever vibration exists. Patent and all rights for sale. DR. W. F. KENNEY, 122 Hope St., Providence, R. I.

WANTED—First class electric automobile machinist and repairmen in Denver, Colo. P. O. BOX 1023.

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makes a new lining out of a dirty, faded and stained inside. Will not fade or wash off. Leaves the cloth soft and pliable.
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FORD OWNERS—GET OUR CATALOG. AUTO PARTS CO., PROVIDENCE, R. I.

FOREMAN WANTED—To act as foreman and leader on assembly floor of growing company manufacturing electric commercial trucks. Man must be experienced and of undoubted ability as leader and organizer. For right man, good wages and fine chances for advancement. Factory near New York City. Address replies to Box 221, care Motor World.

TIRE VALVES THAT CANNOT LEAK. The heavier the air pressure, the more air-tight they become. Stevens Non-Leaking Tire Valves make hand-pumping mere child's play. No back pressure. Get set and try them. Price per set of four, $1. STEVENS MANUFACTURING AND SUPPLY COMPANY, Dept. D, 1225 Wabash Ave. ,Chicago, Ill.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

"A New One."
A $2,500 Auto for $150.00.
Build your own car. We will sell you complete set of Axles, Frame, Springs, Wheels, Steering Gear and Radiator, $150.00. With plan for putting together.
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PEERLESS EXTRA FINE BLACK JAPAN.
Enamels lamps, radiators and fenders to a fine gloss finish. Will not crack, chip or peel. Not affected by heat, retains its lustre.
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AUTOMOBILE AT SACRIFICE—1 model 17, 1911, 5-passenger Buick, $725; A-1 condition. F. MARION SHEEN, 521 Clouet St., New Orleans, La.

ONE-QUARTER PRICE—Fine 5-pass. touring car just overhauled; full equipment; appearance and running A-1; bargain extraordinary, as move east this week. BRATENAHL BLDG., Rm. 5, Cleveland, Ohio.

Another Offer by Dunk—
$15.00 New Auto Trunk—$6.50.
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WE have a very large wholesale clientele and are open to take up European agency for a new motor accessory. Write before sending sample. K., B & CO., LTD., 5 Rue Auber, Paris, France.

ATTENTION—Have a few manufacturers' samples, gentlemen's black broadcloth fur lined overcoats, lined throughout with Australian mink, large genuine Persian lamb collars, sizes 36 to 48. Value $75, will sacrifice for $35 each. Also several ladies' handsome long fur coats, satin lined, worth $90, while they last, $35; and few large size fur robes, plush lined, $15 each. All guaranteed new. Examine before buying. Send express charges, will send on approval. Write or call. E. ROBERTS, Room 8, 160 West 119th St., New York.

WE WANT the most capable salesman in the automobile industry—a man who is holding a good position now. We want THE man who is willing to work hard and faithfully, with unquestionably the most important accessory, looking to comfort and refinement in motor cars, since the beginning of the industry. We want the man who is able to do big things and make big money. All communications, of course, strictly confidential. If you are looking for a chance to reap some of the profits (not merely a salary job) of a concern that is destined to be one of the biggest accessory successes on the market, communicate with us immediately.
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SALESMEN, one who is now visiting automobile trade or owners. Good money made on a very attractive proposition. STURDY MFG. CO., 2637 Michigan Ave., Chicago, Ill.

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J. C. NICHOLS.
DIRECT FACTORY DISTRIBUTORS.
1673 B'way at 52d St., New York City.
Tel, 6161 Col.
Our new model L Carburetor with three speed adjustments, at half price by returning your old model Carburetor.

AUTOMOBILISTS — Buy guaranteed tools and inner tube puncture-repairing material. Do yonr own repairing easily and quickly. Agent's price, $5.00; ours, $3.50, cash with order. Bank references. W. H. MIZELLE, Robersonville, N. C.

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15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

WE ARE perfectly equipped to conduct an up-to-date service department for some good accessory. Best location in city. Fireproof building. Offices, show room, storage and shop for applying and repairs. Automobile elevator. CONOVER & ROBINSON, 250 West 54th St., New York.

FOR SALE—1906 Pierce-Arrow seven passenger touring car, completely overhauled this spring, in first-class running condition, could be used as taxicab or turned into first-class delivery truck for beer peddlers and similar purposes. Cheap to prompt cash buyer. J. R. J., 1004 Sunset Ave., Utica, N. Y.

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As attorney for the heirs of an immense estate, I desire to connect one of the heirs with a reliable automobile manufacturer in an executive capacity, where he can enter the firm, by investing a substantial sum in about six months, at which time he will receive his share to the estate.

Thoroughly familiar with the selling end of commercial vehicles, thoroughly understands conditions relative to the sale of commercial cars in New York City and vicinity, and has plenty of prospects. Has thorough business training, clever correspondent, and capable of meeting and conversing with men of affairs.

Would prefer to manage New York branch of reliable truck firm, but would consider proposition from pleasure car firm, or manufacturers of any reliable lines connected with the automobile trade.

Selling agencies, please do not waste your time or ours answering, as we desire to hear from manufacturers direct.

State fully what you have to offer, also salary and opportunity for investment of the funds, which will be available in about six months.

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No Branches. Beware.

AGENTS WANTED—To handle the $1000 G. J. G. "Junior," racy, classy and specially designed chaseabout with 104-inch wheelbase, with a real 26 H.P. motor, Bosch magneto, Dorian remountable rims with 32 x 3½ tires, at a price of $1,000, which is a money maker for the sales agent. Write for literature and discounts to G. J. G. MOTOR CAR COMPANY, White Plains, N. Y.

FOR SALE—Dealer in new and second-hand automobiles; Ford runabout, 4 cyl., 26 H.P., top, windshield, rumble seat. Maxwell runabout. Oldsmobile, 4 cyl., top, 5-passenger, and windshield. Rambler, 2 cyl., top, 5-passenger, and delivery body, all in good condition. F. B. ARDRIE, 21 Carnes St., W. Lynn, Mass. P. S.—Wanted—to buy 50 automobiles.

PEERLESS LEATHER TOP DRESSING
Makes leather, rubber and pantasote tops and curtains look like new. A safe, durable renovator that leaves the cloth soft and pliable.
The Columbus Varnish Co., Columbus, O.

WILL GIVE MY PERSONAL MORTGAGE on improved real estate for a 1911 or 1912 Auto in good shape and worth prices asked; must be a reliable make. C. A. SACKETT, 21 Broad St., Milford, Conn.

FOR SALE—High-grade touring car, in first-class condition; cost over four thousand when new; will sacrifice for quick sale. STRAUS'S, 707 Main St., Buffalo, N. Y.

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WILL sell or trade 60 foot mahogany motor yacht for automobile or real estate. 212 Niagara St., Buffalo, N. Y.

PEERLESS AUTO TOP DRESSING
Waterproofs mohair and duck automobile tops and curtains. Makes faded and stained tops look like new. Leaves the cloth soft and pliable. Dries over night.
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The Dunk Way Pays.
Make your car up to date.
Our new fore door five passenger bodies completely finished, $52.50. New Mohair Tops at $13.50.
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Detroit, Mich.
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AUTOMOBILE Cylinders reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

FOR SALE—Caldwell Gasolene Lawn Mower; specification—4 cyl. vertical motor, dry batteries and Bosch magneto, Schebler carburetor, width of cut 40 in., weight 2,000 lbs. For complete description and price address INDIANAPOLIS MOTOR SPEEDWAY, Indianapolis, Ind.

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A renovator for leather seats and cushions. Brightens the finish, softens the leather and does not crack or peel. Dries in 20 minutes.
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WE SHIP SUDDEN. $40.00 tops, mohair with curtains, $10.00; $35.00 windshield, $7.50; 32 x 3 tires, $6.00; 32 x 3½ Diamond, Goodyear, etc., 1st quality, $14.00; Speedometers, $8.00; tool boxes, $1.75; Ford radiator, $18.00; Buick radiator, $30.00; Puritan gas tank Comp. $10.00; Puritan carburetor, $1.00; Electric horn, $5.00; Remy magneto, with coils, $18.50. At your service for further information. PURITAN MACHINE CO., 51 to 57 Tenth St., Detroit, Mich.

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"Do It."
Detroit Self-Starter. Throw your Crank away. Sold direct. No agents. $10.00.
Every Sale Makes a Friend.
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MAILING LISTS—Automobile owners, dealers, garages, repair shops, commercial car owners, or any make of car. OWNERS AUTO LIST CO., Albany, N. Y.

AUTOMOBILE FOR SALE—Model 17 Buick, newly painted. Good running condition. Owner has two-passenger car and don't need this one. BYCK ELECTRIC SUPPLY COMPANY, Waycross, Ga.

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PREDOMINATING—even above the handsome appearance, and general distinctiveness of the Conover Safe-Guard—is its *sturdy* strength.

It is a formidable defender of the vital front parts of your car; an effective barrier between the lamps, fenders, radiator, wheels, frame and — *damage.*

THE Conover Safe-Guard is a massive channel-bar—not an ordinary pipe "bumper." It is supported at four points—rather than two—by *semi-elliptic* steel springs—of the same character and strength as the chassis springs of the most expensive car.

If dented it may easily be hammered back into its original shape. This is an important feature.

THE Conover Safe-Guard is guaranteed against any possible contingency that may arise—from any cause—for a period of two years.

In other words, the manufacturers offer it as something intended to be broken, if that is necessary, in order to protect the value and usefulness of the car behind it. And they continue this protection at their expense for two years. Such confidence have they in its durability and protective power.

PRICES:

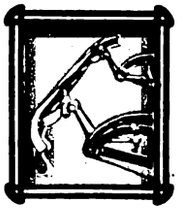
Best quality of steel heavily enameled in black, royal blue, French gray or maroon; bar 2 in. wide. *(Any other color of enamel $5.00 extra)*	$15.00
Best quality of steel, brass or nickel plated; bar 2 in wide	17.50
Solid bronze, finished in either brass or nickel; bar 2 in. or 2¾ in. wide	25.00

Shipped express paid, anywhere in the United States, on thirty days' trial, upon receipt of regular price. When ordering give name and model of car. Specify size and finish desired. An attractive booklet will be sent upon request.



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Sellers : : Newark, N. J.

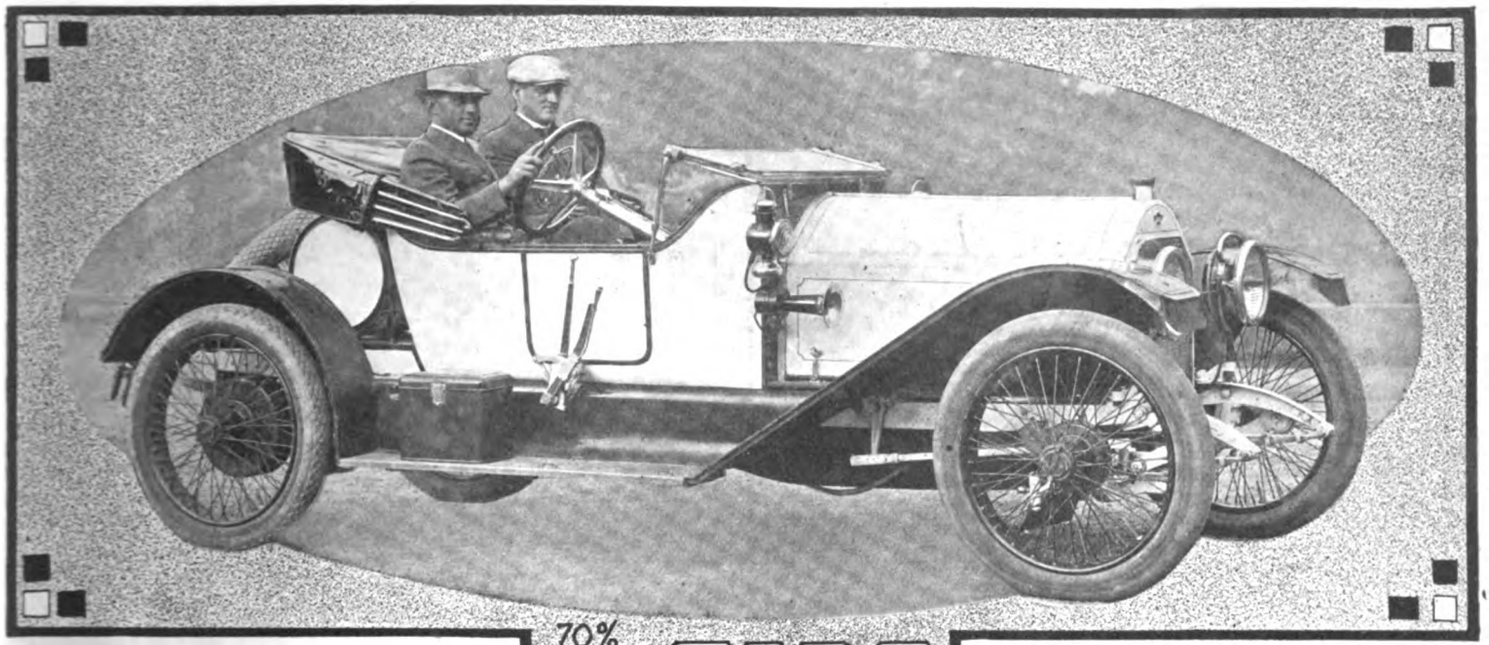
NEW JERSEY TUBE CO.
Makers : Newark, N. J.



CONOVER

"The Dependable Safe-Guard"

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70% More Tire Miles

WIRE McCUE WHEELS

This illustration shows one of the latest Stutz models with Mr. Stutz at the wheel. The Stutz car of a similar model, equipped for racing, which made so remarkable a showing at Milwaukee—so remarkable as to be designated by the press as the most sensational in the running of the race—also carries wire wheels as regular equipment.

On the Race Course

Aside from winning practically every event of any note abroad for the past couple of years, wire wheels made a remarkable showing in the running of the Vanderbilt race, last week. Hughie Hughes, in a Mercer, very much smaller powered than the winner, was defeated in the 300 miles by 43 seconds. Gil Anderson, in a Stutz, was fourth. These two cars, both of which were wire wheel equipped, were the only American cars among the first five, the other three cars being foreign speed creations of large size.

In speaking of the showing of these two cars, The Automobile says: **"The race of the Mercer was wonderfully good, as Hughie Hughes was well up with the more powerful Mercedes pair throughout"—"The Stutz made an elegant showing, running the steadiest race of the field. The car lacked only the supreme power to take the pace."**

Both of these drivers will tell you that wire wheels not only saved time by making the tires last longer but by making the cars easier to handle and by making them hug the track more closely, they enabled faster driving, particularly on the curves.



On Private Motor Cars

As we have pointed out several times before, the winning of races with wire wheel equipped cars simply serves to emphasize the value of wire wheels on cars for general touring. Practically all of the leading cars abroad, both those used for racing as well as those used for individual owners, give preference to wire wheels for stock use. Just as soon as the remarkable advantages of wire wheels over wooden wheels were demonstrated to the foreign manufacturers, they almost entirely discarded their wooden wheel equipment in favor of wire wheels.

That condition is taking place in America just as surely as it did abroad—a little more slowly in this country because of peculiar business conditions existing in the automobile industry—but wire wheels are here and a great many car manufacturers will furnish them for 1913. Those dealers who are keen to be the first to offer a wonderful improvement to their customers will insist upon wire wheels on the cars they are selling. You can get wire wheels if you will insist. If you have any trouble about getting wire wheel equipped cars, write us and we will help you.

The McCue Company, Buffalo, N. Y.

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Mr. Automobilist:

Your tire maker is very anxious to impress upon you the importance of

Tires Inflated to the Right Pressure

He insists that this is tire economy and

Saves You Money

How do you know what pressure you have in your tires? A

SCHRADER
UNIVERSAL
Tire Pressure Gauge

(Trade Mark Registered in U. S. Patent Office)



(Patented March, 1898—Other Patents Pending)

will tell the exact pressure in your tires at any time, day or night, by simply holding this Gauge to your Valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the Gauge can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the Indicating Sleeve can be pushed back into the Gauge with your finger. No catches or snaps to operate or get out of order. This Gauge is 2½ inches long over all, short enough to apply easily to the smallest diameter of wheel and can easily be carried in the vest pocket or the change pocket of your trousers.

Price $1.00 Each
Ready for Delivery Now

Guaranteed Simple and Absolutely Accurate

Can be obtained from all tire manufacturers and the dealers, or

A. SCHRADER'S SON, Inc.
28-32 Rose Street New York City

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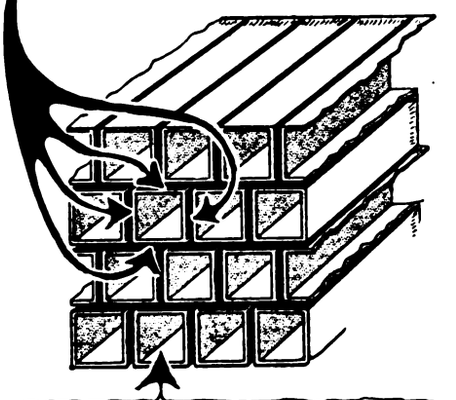
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Water All Around



You can remove this tube or one hundred like it and make your own repairs

FEDDERS

Radiators

ASIDE from their general all-round superiority and efficiency, the ease with which Fedders Square Tube Radiators may be repaired is a point well worth considering. Any tinsmith with a pair of soldering irons can repair one or one hundred tubes with ease and speed in the event of an accident of any sort; whereas with radiators of any other type, the question of repair generally is a question of laying up the car for some considerable period.

While we lay special stress upon the value of square tube radiators and urge their use, at the same time we have the plant and the equipment to produce whatever type, style and size radiator may be desired. Just send us your blue prints and we will give you figures to your specifications.

One point that all dealers should bear in mind is this—if the car you sell is equipped with a Fedders radiator, you have a strong quality argument in that fact. Don't overlook this.

Fedders Manufacturing Co.
BUFFALO, NEW YORK

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Overland 1913

$985

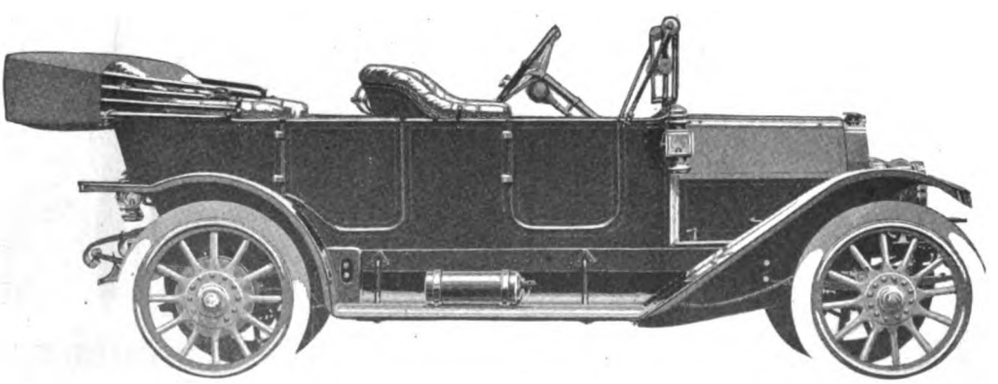
Completely Equipped

Study the Specifications

Self Starter	*Remy Magneto*
30 Horsepower	*Warner Speedometer*
5-Passenger Touring Car	*Mohair Top and Boot*
110-inch Wheel Base	*Clear Vision Wind Shield*
Timken Bearings	*Prestolite Tank*
Center Control	

¶ There is more in this car than a casual glance will demonstrate. Get up close. Go into every detail. Study the specifications. Analyze the generously big, powerful construction which has made this model the sensational value of the year. Note the complete equipment, backed by consistent excellent performance. Study the spring construction; the sturdy, dependable, three-quarter floating rear axle. Where can you get these and the many other big features in cars costing less than $1200? Our 1913 catalogue gives the particulars; send for it today.

The Willys-Overland Company, Dept. 50, Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, October 10, 1912 No. 3

AUTOMOBILE SALES ASSOCIATION FORMED AT INDIANA CONVENTION

Meeting of Manufacturers, Dealers, and Other Tradesmen, Called to Discuss Problems, Results in Nucleus of National Organization—Speakers Emphasize Importance of the Dealer.

Indianapolis, Ind., Oct. 9.—The first general sales convention of automobile tradesmen closed this afternoon, after forming a permanent organization, to be known as the General Automobile Sales Association. It was the outcome of a resolution introduced by Louis Wurzburg, of the Colt-Stratton Co., of New York, seconded by Maxton R. Davies of the Motor World. The idea was presented to the convention and met with united approval of those present. The following is the resolution:

Whereas, We, the charter members of the first automobile retail sales convention are of the opinion that an organized movement on behalf of the retail dealers will be of great benefit to the industry, be it

Resolved, That we hereby constitute ourselves the nucleus of such an organization and pledge ourselves to its perpetuation, and be it

Resolved, That the next meeting be held in Detroit in 1913, at a date to be later determined, and be it further

Resolved, That the following men be appointed as a committee in charge to serve the year: John C. Wetmore, New York Evening Mail; William Boyd, Curtis Publishing Co., Chicago; E. Le Roy Pelletier, Detroit; J. J. Cole, Indianapolis; Hugh Chalmers, Detroit; Roy D. Chapin, Detroit; Carl H. Page, New York; Captain H. L. Stratton, of New York; Charles W. Mears, Cleveland; H. M. Swetland, New York; John Lee Mahin, Chicago; Frank B. Stearns, Cleveland, and Homer McKee and G. J. Monihan, Indianapolis. Pelletier is chairman of the committee.

The convention, which was a daring conception and reflected great credit on J. J. Cole and other men who conceived the plan, was a success from every standpoint. The basis of the movement was well expressed by President H. O. Smith, of the Premier Motor Mfg. Co., who stated in the opening address yesterday that the problem of distribution is vastly more of a problem than the problem of manufacture, and that the dealers were invited with the idea that something might be presented that might arouse them to action. The poor car, he said, had some chance with a good dealer; he added that the average salesman's list of prospects was a list of car users, and urged that more effort be made to create new interest in selling to the much wider market consisting of those who do not own cars. The big problem, said Smith, is not how this country can absorb two or three hundred thousand automobiles but how to arouse its immense dormant buying power. He urged that dealers who take hold of a line give it sufficient support and back it to the limit, and that more attention be paid by dealers to quality.

Elbert Hubbard, of East Aurora, told the convention that his son is an automobile

(Continued on page 18.)

REORGANIZATION OF U. S. MOTOR FINALLY ACQUIRES MOMENTUM

Creditors' Committee Secures Part-Cash Offer After Hope Seemed Vain—Stockholders To Be Assessed $24 Per Share—Basis On Which Old Stock Will Be Exchanged for New.

Reconstruction of the embarrassed United States Motor Co. now may be said to have made substantial progress. After nearly two months of unremitting work, the creditors' committee, of which Sidney S. Meyers is counsel, has evolved a plan which has been recommended to the creditors for acceptance and which is so much better than earlier expectations made appear possible, that there is small likelihood that it will fail of a general welcome.

It provides for not merely an allotment of stock but for payment of 25 per cent. in cash. As, at forced sale of the big corporation's property, the merchandise creditors hardly would have received a penny, the 25 per cent. in cash that has been tendered is viewed as an uncommonly favorable settlement.

In addition, the creditors will receive 65 per cent. in stock in the new company which will be organized—25 per cent. in first preferred, 25 per cent. in second preferred and 15 per cent. common, a total of 90 per cent. of their claims.

As it is known that at one time the creditors' committee was offered a settlement made up wholly of paper, and later was tendered only 10 per cent. in cash, the measure of the present settlement is made plain. It required earnest work on the part of the creditors' committee to bring it about and it was made possible only because the holders of the $6,000,000 United

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States Motor debentures generously gave their assent and permitted the creditors to be favored.

The holders of these debentures to the amount of exactly $6,161,510, will receive no cash whatever; instead, they will accept 140 per cent. in stock of the new company —50 per cent. in first preferred, 50 per ecnt. in second preferred and 40 per cent. in common, the apparent premium of 40 per cent. being a return for their generous action, and which is not considered unfair inasmuch as the debenture holders must dispose of the new stock as best they may.

To pay the creditors their 25 per cent., and to provide working capital for the reorganized company when it is to be formed, $6,730,087.87 will be raised by levying an assessment of $24 per share on both U. S. M. common and preferred, the same assessment being levied on the shares of the Columbia Motor Car Co., which it appears are separartely held. This assessment of $24 will provide funds as follows:

On 11,499,733 U. S. M. pref....	$2,759,935.92
On 12,206,350 U. S. M. com....	2,929,524.00
On 13,400 Columbia preferred.	3,216.00
On 118,000 Columbia common	28,320.00
	$5,720,995.92
Cash on hand at the close of ness September 11, 1911....	1,009,091.95
Total	$6,730,087.87

Of this amount, $3,000,000 will be utilized as working capital and the balance will be used to discharge claims against the two classes of creditors, the first of which holds paper endorsed only by the United States Motor Co. and the second which holds paper bearing the endorsement of both the big company and its subsidiaries.

Both the merchandise creditors and the banking creditors will participate in the 25 per cent. cash settlement. An underwriting syndicate has been formed and is standing back of the proposed plans.

The reorganization plan will provide for the formation of a new company which will be capitalized at about $28,000,000, instead of $42,500,000 as in the case of the present company, for which a receiver was appointed on September 11th. Of the latter, it transpires that but $23,837,000 had been issued, which amount takes no account of the $6,000,000 debentures.

The holders of the present preferred stock in both the United States Motor and Columbia Motor Car companies and who will be assessed 24 per cent., will receive 24 per cent. of first preferred shares in the new company, 25 per cent. of the second preferred and 30 per cent. of the common. The holders of the common stock, who also must meet the assessment of $24, will receive 24 per cent. in first preferred, 17½ per cent. in second preferred and 30 per cent. in common.

STEARNS COMES TO RELIEF OF THE KNIGHT SITUATION

Cleveland Car Maker To Produce the Sleeve-Valve Engine for the Trade —Removes Embarrassment of Atlas Failure.

With the Atlas Engine Works, of Indianapolis, still in the hands of a receiver and its future problematical, the Knight situation in this country has been saved by the F. B. Stearns Co., of Cleveland, to whom the Knight interests owe so much.

As is fairly well known, but five Knight licenses were granted to American manufacturers, four of them to makers of cars and the fifth one to the Atlas Engine Works, which, it then was stated, gave to it the exclusive right to produce Knight engines for the trade at large. The Indianapolis company booked substantial orders from the several manufacturers, Stearns excepted, who produced cars employing the well known sleeve-valve motor, and also took contracts from a number of others who purposed employing it. When the Atlas Engine Works failed, some four months since, all of these manufacturers were greatly embarrassed by the closing of their source of supply. On two separate occasions, it appeared likely that a purchaser for the Atlas plant had been found but the negotiations fell through and, as a result, the situation has been discomforting, to use a mild term.

Apparently no relief was in sight until late last week, when it became known that the F. B. Stearns Co. quietly had been arranging to save the situation. It transpires that its license under the Knight patents does give to it the right to manufacture motors for the trade, and this is exactly what the Stearns company has arranged to do. Recent additions to its factory in Cleveland have enabled it to undertake the work, and as the Knight motors soon will be available the embarrassment now felt by several car manufacturers will be relieved; and as, since its adoption of the Knight engine, some two years ago, the Stearns company has built every part of its engine, none better is fitted to carry on the work.

The demand for the Stearns-Knight car itself continues unabated. During its first Knight year the Stearns company did the largest business in its history, and every indication points to a still larger volume. At the end of the first quarter of its new fiscal year—that is, at the end of September, 1912—its records show that it has shipped a greater number of cars than ever before, the increase over the corresponding period of the preceding year being more than 100 per cent. In addition the orders which are in hand also are of a record-breaking nature.

Grabowsky, of Illinois, in Trouble.

Wholly separate and distinct from the proceedings brought by a stockholder against the manufacturing company of the same name in Pontiac, Mich., which still are pending in the courts of that state, the Grabowsky Power Wagon Co. of Illinois, the headquarters of which are in Chicago, has been placed in the hands of the Central Trust Co. as receiver. The same trust company also has been appointed ancillary receiver for the New York property of the Illinois company, which consists of a six-story garage at 245 West 12th street, New York City, where between 30 and 45 trucks are in use and some 54 men employed. Under contract, most of the trucks are in the service of New York department stores. The proceedings which resulted in the appointment of the receiver were instituted by Maurice Moyer, a creditor for $3,000, who alleged that while insolvent the Illinois company made a preferential payment to a Chicago bank; also that creditors had become restive and were threatening suit. The estimated value of the property in New York is $50,000.

Work Started on Marathon Tire Factory.

The Marathon Tire & Rubber Co., recently organized, has acquired a site in Cuyahoga Falls, O., on which is being erected a building, 65 x 300 feet, which it is expected will be completed, equipped and ready to begin the production of tires about November 1st next. The officers of the company are: John R. Scott of Cleveland, president; W. F. Ridge and Walter H. Jenks of Akron, respectively vice-president and general manager and secretary-treasurer. These officers with C. W. Vaughn of Cuyahoga Falls constitute the board of directors. Both General Manager Ridge and Secretary-treasurer Jenks previously were connected for a considerable term of years with the Firestone Tire & Rubber Co., of Akron, which implies that they possess the necessary experience. The sales manager of the new company will be Franklin Kesser, who for many years was a member of the sales department of the Hartford Rubber Works Co. but who more recently has been a member of the staff of the Firestone company.

Havers Declares Big Dividend.

To mark the close of its fiscal year, the Havers Motor Car Co., of Port Huron, Mich., maker of the Havers "six," has declared a stock dividend of 40 per cent. and a cash dividend of 5 per cent. The company is capitalized at $200,000.

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JONES SEEKS LAW REMEDY WHEN ARBITRATION FAILS

Claims Precision Tool Company Refused to Abide by Decision of Arbitrators—Latter Denounced by Precision.

Arbitration of business disputes as a means of avoiding litigation is not rare and has been much written of, but that it does not always result as well as fancy pictures is indicated by a suit now awaiting trial in the Supreme Court for New York county, wherein the Jones Taximeter Co., of New York, has taken issue with the Precision Tool and Instrument Co., also of New York, and in a lengthy legal complaint asks the sum of $7,503.33. The reasons therefor are voluminous and the answer of the Precision company is not less brief, and in both the failure of arbitration is made clear.

The difference of opinion which led to unsuccessful arbitration arose over a contract whereby the Precision company on May 1, 1909, contracted to complete a total of 3,000 taximeters for the Jones company, the Jones company to pay bills weekly and to meet all legitimate expenses of manufacture with an added 25 per cent, profit to the Precision company. Defects were to be remedied free of charge. Should the price per meter exceed $40 but not exceed $45, the Jones company was to be permitted to receive such a sum as would reduce the profits to 20 per cent. In the contract there also was a provision that all disputes be arbitrated by a board consisting of a man chosen by each of the disputants and a third man chosen by the two so named.

The whole bill, so the complainant says, amounted to $134,307.50, a price of $44.77 per meter, and the Jones company thereupon demanded $5,372.30 as its 5 per cent. reduction in the profits, which demand was refused. Other claims are that the defendant charged $5,831.30 for repairs which should have been made free of charge; charged more than its 25 per cent. profit on certain items; sold certain parts belonging to the Jones company; delivered defective goods which did the Jones company great damage; delayed output and delivery; refused the Jones company access to the Precision books and records and did a long list of things which totaled a disputed account of $74,274.

Then the arbitrators got busy. The Jones-Precision Hague Tribunal hardly had commenced deliberating before the Precision delegate resigned, so the Precision answer states. It adds that the third member, being supposed to have information only as the other arbitrators introduced it as evidence, went ahead and investigated for himself, talking with Precision employes and committing other such acts. However, the arbitrators, even if one of the board had resigned, were undaunted and went through with flying colors, returning with promptness a verdict of $7,503.33 for the Jones company, which the Precision company as promptly refused to pay. The arbitration having gone for naught, the inevitable law was resorted to, and last week the Jones attorney notified the Precision lawyer that unless certain papers and letters in the defendant's possession are produced at the trial, the evidence on these points would be received second-hand. Meantime Jones is making taximeters and is awaiting developments.

Flanders Files a $300,000 Mortgage.

To take up $80,000 of the indebtedness of its predecessor, the Metzger Motor Car Co., and for the purpose of acquiring additional working capital, the Flanders Motor Co., of Detroit, which is a Delaware corporation, has filed a trust indenture and first mortgage running to the Union Trust Co., of Detroit, for $300,000. Three-year notes, maturing October 1, 1915, will be issued for the amount of the mortgage

New York Creditors Pursue Frey.

The Frey Auto Supply Co. of Buffalo, N. Y., is the defendant in two actions now listed on the current calendar of the Supreme Court for New York county. In one the Premier Novelty Mfg. Co. of New York City asks judgment on an account of $233.45 and in the other, of which an alleged unpaid bill is the basis, Gottfried Piel, also of New York City, trading under the style The G. Piel Co., asks $97.70.

Editor Becomes an Engine Manufacturer.

Victor C. Parker, editor of Modern Power, of Winnipeg, Can., has relinquished those duties and removed to Detroit, Mich., where he has formed the Parker Motor Co., which will manufacture a rotary valve engine of which he is the inventor. A temporary office and experimental shop has been established at 660 Grand River avenue, where the first engine probably will be produced within the next few months.

Stenographer to Make Inner Tubes.

Walter Reason, who is a court stenographer in Pontiac, Mich., has organized the Reason Tire Co. in that city, which will market a puncture proof inner tube of which he is the inventor. The tube itself is being manufactured in Akron and the initial output probably will be ready for the market before the close of the current month.

REORGANIZATION FAILS TO HELP MORGAN TRUCK

Creditors Secure Appointment of Receiver After Assignment Had Been Made—End of Long, Much-Checkered Career.

After an uphill fight which has extended over a period of about ten years, and despite the reorganization which was effected in July last, the Morgan Motor Truck Co., of Worcester, Mass., was petitioned into involuntary bankruptcy on Thursday last, 3rd inst. The petitioning creditors are Bofinger Bros., Lybrand, Ross Bros. & Montgomery and the Rowland Advertising Agency, all of New York, whose claims amount to $1,906. Their petition was filed with Judge Morton in the United States District Court in Boston, who appointed George A. Gaskel receiver. The liabilities of the company are placed at $78,000; at forced sale it is said its assets may bring $15,000.

Previous to the filing of the bankruptcy petition, the company had made an assignment to C. H. Derby, secretary of the company, who stated that the bankruptcy proceedings took him by surprise. Although the recent reorganization of the company suggested that a way out of its difficulties had been found, the appointment of a receiver will cause small surprise to the trade.

Its troubles, as stated, have extended over a long term of years. It was one of the pioneers in the commercial vehicle industry and was one of the first to build heavy trucks, but lack of capital always crippled its operations and prevented its substantial expansion. It several times has been reorganized, or partially reorganized, and on August 1st last, when the most recent change in its affairs occurred, its capital was reduced from $1,100,000 to $300,000, and Charles E. Foster, president of the Foster & Richardson Bedstead Co., of Worcester, Mass., assumed the presidency. Several other new men entered the company at the same time and Ralph Morgan, who organized the company and who was its engineer, retired. The accession of new blood served no purpose, however, and the company made an assignment prior to the filing of the bankruptcy petition in an effort to prevent that very action. Its future now is wholly a matter for speculation.

To Manufacture Trucks in Oklahoma.

The Oklahoma Motor Truck Co., of which P. E. Haworth is president, is reported to have commenced operations in Tulsa, Okla.; its plant is located at 103-109 North Boulder street.

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AVERY COMPANY OFFERING $1,000,000 STOCK ISSUE

New Securities, Preferred As To Dividend, To Be Used for Retiring Bills Payable—Earnings Make Good Showing.

To retire its bills payable, the Avery Co., of Peoria, Ill., is offering the public $1,000,000 of 7 per cent. cumulative preferred stock, the subscription price being $100 per share and accrued dividend. The new issue is preferred as to dividend, and in the event of its dissolution, as to assets over the common stock. It is redeemable up to $115 per share, an annual sinking fund of 2 per cent. being created to retire the stock.

The Avery capitalization, in addition to the issue of $1,000,000 preferred, is made up of $2,245,090 common stock and, according to a financial summary which accompanies the offer to the public, the total net assets of the Avery Co., above all debts, amount to $3,420,269.49; liquid net assets, above all debts, $1,816,956.31; average annual net earnings for four years, $171,820.27; net earnings, January 1, 1912 to June 10, 1912, $256,860.47.

The earnings for the first six months of the current year have been at the rate of approximately seven times preferred stock dividend requirements. No prior liens exist on the company's manufacturing property and none may be created without the consent of three-quarters of the preferred stock.

Application will be made to list the new stock on the Chicago stock exchange.

The Avery Co. is best known to the automobile trade because of its motor trucks and tractors. It is the oldest and largest American manufacturer of agricultural implements. Its president is J. B. Bartholomew, who is the head also of the Bartholomew Co., which makes the Glide car.

Wishart Bookeeper Sues for Salary.

Claiming $725 as salary as bookeeper from March 16 to July 10 of this year, William Farnum brought suit against the Wishart-Dayton Auto Truck Co. of New York in the New York City Court, and Thursday of last week, 3rd inst., filed judgment. It was taken by default, and with interest and costs amounts to $752.84. Since the truck company is now in the banakruptcy court the collection of the judgment in full appears problematical.

Walpole Taken Over by New Company.

To take over the Walpole Rubber Co., a Maine corporation doing business at Walpole, Mass., there has been organized, under Massachusetts laws, the Walpole Tire & Rubber Co. It is capitalized at $4,500,000, of which $3,000,000 is 7 per cent. cumulative preferred stock and $1,500,000 common. It will continue the manufacture of tires and all kinds of rubber goods at the factory at Walpole. The preferred stock has no voting power and is retirable at option of directors at $120 per share and accrued dividends after five years from date of issue in lots of $50,000 at a time.

The incorporators are E. W. Tinkham of Harrisville, R. I.; A. T. Baldwin of Boston; F. J. Gleason of Walpole; E. C. Green of Boston; E. W. Forbush of Roxbury; L. O. Dulcos of West Roxbury, and J. C. Blanchard, Jr., of Boston.

Cleveland House to Market Mansfield Tires.

The Co-operative Tire & Supply, which as its name suggests will endeavor to give the car owner reduced prices, has opened up in Cleveland, O., at Euclid avenue and East 20th street; it will act as United States distributer of the tires made by the Mansfield Tire & Rubber Co. W. G. Henne, formerly of Mansfield, O., is president and general manager; the secretary and treasurer is Ralph E. Warwick, who formerly lived in Cleveland but who for some time has been in Washington, D. C., with the Multigraph Co. Both will hereafter make their residences in Cleveland. The intention of the organizers of the company is to establish branches in various parts of the United States.

Drake Again to Girdle the Globe.

Joseph R. Drake, treasurer of the Hupp Motor Car Co., of Detroit, who last year headed the Hupmobile globe-girdling "export expedition," departed on Wednesday, October 2nd, to retrace his wheel tracks and to enlarge the openings which he made during his previous journey. Last year Drake and his two companions worked westward, but on the present occasion Drake, who is going it alone, is headed east and first will visit Great Britain, whence he will go to Europe, India, China, Japan, the Philippines and Australia.

No Reo Dividend, But Fine Report.

Expectations that the Reo Motor Car Co. would declare a substantial dividend at its annual meeting in Lansing, Mich., last week proved vain. The reports that were rendered, however, showed the company to be in good shape, there being a surplus on hand of $1,500,000. The plant inventory totalled $3,648,000. The sales of the company during the past year amounted to $7,545,860. For labor there had been paid out during the year $1,092,000. There are in hand orders for 13,500 cars.

MIDGLEY TIRE TREAD NOW IN COURT OF APPEALS

Once Held Not To Infringe Adams Patent, Appeal Is Ready for Argument—Language of Lower Court Recalled.

Whether the Midgley tire tread employed by the Hartford Rubber Works Co., of Hartford, Conn., constitutes a patentable device, and whether it infringes the Adams patent, No. 609,320, probably will be decided for all time in the course of the present week. The case has been placed on the current calendar of the United States Circuit Court of Appeals for the Second Circuit, which is located in New York City, and is about to be heard.

The charge of infringement against the Hartford Rubber Works Co. was brought by the Metallic Rubber Tire Co., of Jersey City, N. J., which controls the Adams patent, which was issued August 16, 1898, to Dr. Calvin T. Adams, of New York. It covers a "vehicle tire and more specifically a bicycle tire," in the tread of which is embedded a woven or stitched metallic wire. The wires are corrugated and run parallel around the tread in the direction of its periphery, alternote loops projecting outward, tending to prevent skidding.

When the case was tried before Judge Platt, sitting in the Federal court in Hartford, in July of last year, he practically threw it out of court, after but one week's consideration. The Adams interest promptly filed the appeal which now is about to be heard.

When he denied that the patent had been infringed, Judge Platt stated that "it would be absurd as well as highly inequitable" to bring to bear on heavy automobile tires an invention, such as Adams's, conceived only with light bicycles in mind.

In the papers now before the Court of Appeals, it is brought out that not only the Hartford Rubber Works Co. but the B. F. Goodrich Co. acquired licenses to operate under the Adams patent, but the Metallic Rubber Tire Co. alleges that Thomas Midgley, who devised the tread which bears his name, was employed by the Hartford company to evolve a tire which would have the advantages of the Adams invention without making necessary the payment of royalty. The Midgley tread, according to the complainant, differs from the Adams device chiefly in that the embedded wires are coiled instead of corrugated. Under the Adams patent, it appears that the Hartford company contracted to pay a 5 per cent. royalty, while under the Midgley patent the royalty was half that amount.

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The Week's Incorporations

Newark, N. J.—American Piston Ring capital; to manufacture motor parts. Corporators—Albert Wenzel, William Schmidt, Bertha Wenzel.

Paducah, Ky.—Henry Bros. Taxicab Co., under Kentucky laws, with $200 capital; to operate taxicabs. Corporators—E. E. Henry, Finis Henry, Toy Henry.

Logansport, Ind.—The Rutenber Electric Co., under Indiana laws, with $50,000 capital. Corporators—E. A. Rutenber, J. F. Digan, J. E. De Long.

Chicago, Ill.—Guaranty Auto Co., under Illinois laws, with $50,000 capital; to deal in motor cars. Corporators—J. T. Shea, Emily Crispi, C. D. Rattenhofen.

Seattle, Wash.—Apperson Motor Car Co., under Washington laws, with $5,000 capital; to deal in motor cars. Corporators—H. M. Brinker, L. H. Seely and others.

Nyack, N. Y.—Nyack Garage, Inc., under New York laws, with $15,000 capital; to operate a garage. Corporators—Alan Leggett, John J. Laine, Paul J. Dubois.

Charleston, W. Va.—Taxicab Co., under West Virginia laws, with $5,000 capital; to operate taxicabs. Corporators—F. J. Hill, F. A. McGrew, R. C. Lanham, J. H. Love.

Bucksport, Me.—Bucksport Motor Co., under Maine laws, with $6,000 capital; to deal in motor cars. Corporators—J. E. Witham, H. N. Churchill, H. E. Churchill.

Ellensburg, Wash.—Kittitas Automobile Co., under Washington laws, with $1,000 capital; to deal in motor cars. Corporators—P. W. Stenger, J. A. Larson and others.

Chicago, Ill.—Triangle Tire Co., under Illinois laws, with $5,000 capital; to deal in motor car tires. Corporators—Lawrence A. Cohen, Charles Aaron, Floyd M. Stahl.

Rockford, Ill.—Rockford Motor Truck Co., under Illinois laws, with $10,000 capital; to deal in motor vehicles. Corporators—P. A. Peterson, Levin Faust, John Ledin.

Chicago, Ill.—Commercial Motors Co., under Illinois laws, with $3,000 capital; to deal in motor vehicles. Corporators—Farren H. Ball, Agnes V. Lee, Godlip A. Bureh.

Newark, N. J.—W. C. D. Motor Car Co., under New Jersey laws, with $50,000 capital; to deal in motor cars. Corporators—P. C. Walls, W. E. Champing, W. J. Drumpelmann.

Houston, Tex.—Cole Motor Car Co., under Texas laws, with $12,500 capital; to deal in motor cars. Corporators—J. J. Settgast, Jr., A. J. Binz, F. H. Buelow, David F. Burks.

Newark, N. J.—American Auto Radiator Co., under New Jersey laws, with $10,000 capital; to manufacture radiators—George T. Richings, Roy N. Cunningham, Elizabeth Ritchings.

Spokane, Wash.—Co-operative Auto Sales & Supply Co., under Washington laws, with $1,100,000 capital; to deal in motor cars and supplies. Corporators—M. S. Alden and others.

St. Louis, Mo.—Reliable Auto Livery Co., under Missouri laws, with $2,000 capital; to operate a motor car livery. Corporators—Paul Bertrand, Anthony Hochdorfer, Karl Van Buskirk.

Rochester, N. Y.—Electric Car Sales and Service Co., Inc., under New York laws, with $10,000 capital; to deal in motor cars. Corporators—Max Bernstein, Minnie Bohrer, Glenn H. Leaty.

Atlantic City, N. J.—Holland-Donnelly Co., under New Jersey laws, with $100,000 capital; to deal in motor cars. Corporators—E. J. Holland, E. R. Donnell, G. C. Donnelly, H. L. Giberson.

Elizabeth, N. J.—Excelsior Automobile Co., under New Jersey laws, with $50,000 capital; to deal in motor cars. Corporators—Patrick H. McGann, Hippolyte St. Cade Raismes, Peter Kern.

Cleburne, Tex.—Cleburne Motor Car Mfg. Co., under Texas laws, with $10,000 capital; to manufacture motor cars. Corporators—H. E. Luck, G. A. McClung, O. L. Bishop and others.

Youngstown, Ohio—Youngstown Taxicab Co., under Ohio laws, with $10,000 capital; to operate taxicabs. Corporators—David Friedman, Bert Friedman, Helen Friedman and others.

Seattle, Wash.—Beattie Motor & Wagon Mfg. Co., under Washington laws, with $20,000 capital; to manufacture motor and horse-drawn vehicles. Corporators—W. J. Beattie, C. W. Burdick.

Columbus, Ohio—Silberzahn Gas Engine Co., under Ohio laws, with $10,000 capital; to manufacture internal combustion motors. Corporators—J. Silberzahn, Fred W. Kruse, Mark Winchester.

Santa Maria, Cal.—California Garage, under California laws, with $20,000 capital; to operate a garage. Corporators—Herbert W. Graft, C. I. Hough, R. E. Wheartley, M. Davis, A. H. Davis.

New York, N. Y.—Garden Garage Co., under New York laws, with $10,000 capital. Corporators—Oliver J. Griffin, Fannie C. Griffin, William Oakford, all of 123 West 51st street, New York City.

New York, N. Y.—Acton Taxicab Co., under New York laws, with $2,000 capital. Corporators—Oliver J. Griffin, William Oakford, Florence Oakford, all of 123 West 51st street, New York City.

Newark, N. J.—McDonough-Cogan Motor Co., under New Jersey laws, with $25,000 capital; to deal in motor cars. Corporators—Edward McDonough, Frank T. Cogan, George T. McDonough.

Cleveland, Ohio—Service Garage Co., under Ohio laws, with $10,000 capital; to operate a garage. Corporators—Roy J. Ramson, Karl W. Volk, Fred Desberg, Walter McMahon, John W. Willdis.

Canal Dover, Ohio—S. Toomey Co., under Ohio laws, with $60,000 capital; to manufacture vehicles. Corporators—R. I. Toomey, Theodore Williams, S. J. Brister, M. C. Toomey, Oliver Toomey.

Peoria, Ill.—Jefferson Automobile Co., under Illinois laws, with $30,000 capital; to deal in motor cars. Corporators—R. C. Uckena, Frank E. Howland, F. I. Archdale, W. G. Ronneberg, Cedric Howland.

Cleveland, Ohio—National Lubricating Co., under Ohio laws, with $5,000 capital; to manufacture lubricants. Corporators—Arthur A. Neiger, Maurice Rayden, J. Rathovitz, B. Hayden, Max S. Fishel.

Cleveland, Ohio—Cadillac Automobile Co., under Ohio laws, with $50,000 capital; to deal in motor cars. Corporators—Thomas B. Bolton, William H. Marlatt, F. H. Pelton, M. Jenkins, M. D. Hayes.

Minneapolis, Minn.—Twin City Motor Service Co., under Minnesota laws, with $50,000 capital; to operate a motor car service. Corporators—Frederick L. Gross, Abner G. Showers, William A. Alden.

Rochester, N. Y.—The Fordham Co., under New York laws, with $3,000 capital; to manufacture and deal in automobiles. Corporators—Gerald F. Cox, Eugene F. Reinke, Richard Stanton, all of Rochester, N. Y.

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Indianapolis, Ind.—Marion Garage and Auto Co., under Indiana laws, with $15,000 capital; to operate a garage and deal in motor cars. Corporators—Burr Custer, Edgar S. Paynton, Gilbert P. Butterworth.

Cincinnati, Ohio—Ohio Chauffeur's Protective Association, under Ohio laws, to conduct a social and beneficial organization. Corporators—Grover Bennett, Charles Eckert, Roy Engleman, George Puls, Grover Jabe.

Rochester, N. Y.—Selden Truck Sales Co., under New York laws, with $150,000 capital; to deal in motor vehicles. Corporators—William C. Barry, George C. Gordon, Robert H. Salmons, all of Rochester, N. Y.

New York, N. Y.—48th Street Garage, Inc., under New York laws, with $1,000 capital; to operate a garage. Corporators—Harold C. Knapp, Richard H. McIntyre, Jr., Paul R. Towne, all of 258 Broadway, N. Y.

Cincinnati, Ohio.—Federal Motor Supply Co., under Ohio laws, with $250,000 capital; to manufacture motor car supplies. Corporators—A. M. Draddy, George W. Platt, Emil G. Schmitt, R. L. Dollings, M. F. Platt.

Newark, N. J.—McDonough-Cogan Motor Car Co., under New Jersey laws, with $25,000 capital; to do a general automobile business. Corporators—Edward McDonough, Frank T. Cogan, George T. McDonough.

New York, N. Y.—Imperial Auto Renting Co., under New York laws, with $1,000 capital; to rent motor cars. Corporators—Abraham S. Gusson, 621 East Third street, Brooklyn; David Abraham, 441 Hopkinson avenue, Brooklyn; Alexander Miller, 126 Fountain avenue, Brooklyn.

Changes in Capitalization.

Waukesha, Wis.—R. L. Kenyon Co. from $100,000 to $200.000.

Canton, Ohio—Knight Tire & Rubber Co. from $500,000 to $3,000.

Indianapolis, Ind.—Motor Car Mfg. Co. from $75,000 to $150,000.

West Allis, Wis.—Sternberg Mfg. Co. from $50,000 to $100.000.

Louisville, Ky.—Kentucky Automobile Co. from $24,000 to $65,000.

Cincinnati, Ohio—Standard Electric Tool Co. from $10,000 to $15,000.

Changes of Corporate Names.

Chicago, Ill.—Elmore Motor Co. to Illinois Automobile Co.

Chicago, Ill.—Henry Lee Power Co. to Old Reliable Motor Truck Co.

POPE'S ANNUAL STATEMENT SHOWS RENEWED STRENGTH

Sales Not So Large But Earnings Are Greater Than Previous Year—Dividend on Common—Figures in Full.

Its annual report for the fiscal year ending July 31st last, which just has been made public, shows that the Pope Mfg. Co., of Hartford, Conn., has recovered its tone. Its statement for the previous year was far from inspiring, but its present balance sheet shows that it has regained its strength and earning capacity to such an extent that not only is it likely that the 6 per cent. dividend on its preferred shares will be maintained but that a dividend at the rate of 4 per cent. will be declared on the common stock.

During the fiscal year of 1911, the company's sales amounted to $4,081,486.82, on which the net earnings were $214,119.22, a decrease of $531,272.11. During the year 1912 the sales were less, $3,734,112.56, but the net earnings amounted to $251,290.02, and the surplus has been increased from $860,203 to $1,012,920.

Working capital as shown by the balance sheet was $2,018,335 as compared with $1,409,597 last year. Cash on hand was increased to $253,829 from $92,069 in 1911, while materials and supplies on hand were increased from $1,190,841 to $1,477,313. Accounts and notes receivable were also increased from $338,329 to $396, 608, an increase of $58,279. Accounts payable were $179,528, an increase of $37,842.

The balance sheet in full is as follows:

ASSETS

Real Estate, Buildings, Plant, Equipment, Machinery and Tools in Operation July 31, 1911, Patents, Licenses and Good Will	$5,781,293.27		
In Process of Construction and Installation July 31, 1911	36,276.16		
		$5,817,569.43	
Add—Net Adjustments	$1,126.69		
Expenditures on Additions and Improvements, Complete and in Operation	170,821.69		
In Process of Construction and Installation July 31, 1912	71,732.77		
		243,681.15	
		$6,061,250.58	
Deduct—Unoperated Machinery, Tools and Equipment Sold, Scrapped or Retired and Charged Off to Reserves for Renewals and Replacements		91,316.07	
		$5,969,934.51	
Less—Reserves for Replacements and Accrued Renewals to Plant		349,683.28	
			$5,620,251.23
Deferred Charges and Prepaid Expenses, including Prepaid Insurance, Advance Work on Models for future production, Prepaid Discounts and Commissions			363,333.31
Contract to be Liquidated by Deferred Installments			170,844.21
Inventories of Materials, Supplies, Unfinished and Finished Product		$1,477,312.56	
Accounts and Notes Receivable (Less Reserves for Bad and Doubtful Accounts)		396,608.25	
Cash and Cash Items in Bank and Office, including Fund for Payment of Unclaimed Dividends		253,829.08	
			2,127,749.89
			$8,282,178.64

LIABILITIES

Capital Stock—			
Authorized and Issued:			
25,000 Shares Preferred	$2,500,000.00		
40,000 Shares Common	4,000,000.00		
		$6,500,000.00	
Less—Stock held in Treasury:			
2,018 Shares Preferred	$201,800.00		
3,092 Shares Common	309,200.00		
		511,000.00	
			$5,989,000.00
Two-Year 6% Coupon Gold Notes, Maturing April 1, 1914			1,000,000.00
Accounts Payable, including Accrued Interest on Notes, Accrued Taxes, Royalties, Commissions and Excise Tax on Income		$179,537.52	
Pay Rolls Accrued		33,749.71	
Deposits on Orders		46,741.88	
Unclaimed Dividends		69.00	
			260,098.11
Contingent Liabilities			20.159.66
Surplus July 31, 1911	$936,430.85		
Net Earnings for Year ending July 31, 1912	251,290.02		
	$1,187,720.87		
Less—Dividends Paid:			
6% on Preferred Stock	$137,892.00		
1% on Common Stock	36,908.00		
	174,800.00		
			1,012,920.87
			$8,282,178.64

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In the RETAIL WORLD

Salesrooms and a garage, 35 x 155 feet, are to be built in Newark, N. J., at 380-80½ Central avenue, for Joseph L. Feigelman; the approximate cost is $12,000.

The Willys-Overland Auto Co. of Buffalo, N. Y., has been granted authority to build a three-story structure at 1075 Main street; the estimated cost is $39,000.

A. I. Reifenstein has purchased a garage in Baltimore, Md., on Madison avenue, between Lafayette avenue and Mosher street; the consideration was $15,000.

Plans are being drawn for a new garage which the Marathon Garage Co. is to build on Gilbert avenue in Cincinnati, O. The specifications name $5,000 as the cost.

The former Abbott shirt factory in Watertown, N. Y., is being remodeled for garage purposes; the occupants will be Frank L. Seaker and Elmer C. Curtis.

A garage at 626 Superior street, Antigo, Wis., which has been closed for some time, has been opened by the Service Motor Co. G. A. and F. J. Zwicky are in charge.

The Mattox Motor Car Co. of Lancaster, Pa., plans to remodel the old Odd Fellows' Building for a garage and salesrooms; it handles the Empire and Mitchell lines.

Frank Boetcher of Lanark, Ill., has sold his garage to William Puterbaugh of Cherry Grove, in the same state. Boetcher will locate in Polo, another Illinois town.

Fred H. Berold of Cincinnati, O., has leased a site at Gilbert avenue and Rogers place, on which he will erect a two-story garage; the expenditure will be $18,000.

W. A. Horrell, formerly of Los Angeles, Cal., has entered the truck field in Phoenix, Ariz., as Mack and Saurer dealer; his salesrooms are at 235 West Washington street.

M. & A. Garage is the style chosen for a new business in Macomb, Ill. The initials in the firm style are those of the proprietors, J. C. McDonald and Joseph Atherton.

A. D. Bothe has formed an automobile agency in Des Moines, Ia. He will distribute Great Western cars locally and will have the state agency for Universal trucks.

The Anderson Storage & Garage Co. of New York City, an incorporation, has dissolved voluntarily; papers were filed in the office of the secretary of state last week.

C. A. Bond, of Lawrenceburg, Ky., has secured permission to build a brick garage in Lexington, in the same state, at Main and Spring streets; it will cost $7,500. When completed it will be leased by Barnett & Son.

Permission has been granted to Julius Straus of Milwaukee, Wis., to build a garage, store and apartment building at Downer and Hackett avenues; it will cost $45,000.

E. E. Hileman, of New Castle, Pa., is organizing a selling company in Sharon, in the same state, to handle Studebaker cars. The salesrooms will be in the Layton Garage.

Bids are being received for a garage which is to be constructed by John Weilesbacher of Pittsburgh, Pa., at 13th and Carson streets; the dimensions are 50 x 100 feet.

Charles F. Smyth, of Wichita, Kan., has purchased a half interest in the Cadillac agency in that city from George W. Denton; the firm is located at 114-16 North Topeka avenue.

The Atlantic Garage Co., of 32 Hampton avenue, Brooklyn, N. Y., is having plans drawn for a garage, 80 x 100 feet, which it will erect at Atlantic and Albany avenues; the cost will be $7,500.

The Yager Motor Car Co. of Louisville, Ky., is about to build a garage and salesrooms, 90 x 50 feet, at Third and A streets; the company sells Hupmobile, Peerless and Columbus Electric cars.

George A. Allen, secretary-treasurer of the Staunton Motor Co., of Staunton, Va., has sold his interest to J. L. Baugher; the business will be continued as heretofore at 107-9 South New street.

Contracts have been let by the Charles Schiear Motor Car Co. of Cincinnati, Ohio, for a one-story stone, brick and steel garage to be built at 3705 Montgomery road; the contracts total $5,000.

J. A. Udall, Jr., and Harry Lawrence, Jr., owners of the Patchouge (N. Y.) Garage Co., are building a new garage at North Ocean avenue and Oak street; it will contain 6,000 square feet of floor space.

The Pope-Hartford Co. has been organized in Boston, Mass., to handle the car of that name; George L. Dodd is president and Charles E. Cousens treasurer. The company will locate at 591 Boylston street

Upon the petition of the Firestone Tire & Rubber Co. of Akron, O., the Ehle Tire Repair Co., of Council Bluffs, Ia., has been placed in the hands of a receiver; W. A. Groneweg was named by the court. The Akron concern claims an indebtedness of $3,690.57 for goods sold and delivered.

The Nyeberg Automobile Sales Co. of North Carolina, recently organized to handle Nyberg cars in that state, is to open salesrooms on Patton avenue, in Asheville. The company comprises John B. Rumbough, R. R. Reynolds and Gilliland Stikeleather. Rumbough will handle the Nyberg locally in a new garage on North Main street.

John Stone, formerly connected with the Independent Auto Repair Co. in Lincoln, Neb., has entered the trade for himself in Des Moines, Ia., under the style Stone Auto Repair Shop; his location is 812 Walnut avenue. Stone is building, for use in his business, a car which will have a wheelbase of 155 inches, tires 41 x 5 inches and a 60-horsepower motor.

The Cadillac Automobile Co. of Cleveland has been organized to take over the Cadillac agency in that Ohio city hitherto possessed by the Barger Automobile Co., of 1728-34 Euclid avenue; T. H. Towell is president of the new company, which has a capital stock of $50,000. Towell, also, is president and treasurer of the Eclipse Musical Co., talking machine dealers.

The Indianapolis Automobile Clearing House, which deals solely in used cars, has been incorporated. E. J. Kane, manager prior to the incorporation, becomes president, and T. E. Byrne, his assistant, has been made vice-president, and John L. Duvall, cashier of the Marion County State Bank and vice-president of the Home Insurance Co., secretary and treasurer.

The New England Garage Co., of 230 Main street, Hartford, Conn., which has been conducted by Owens C. Wolfe and W. E. Kelton, will hereafter be operated by Wolfe, who has purchased Kelton's interests and who will continue to handle Cutting cars. Kelton, who has done considerable territorial work for the Cutting Motor Car Co., will devote all his time to that service, in the capacity of New England representative.

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WELL-FILLED LIST FOR BOARD OF TRADE SHOW

490 Exhibits Assured for New York Show in Garden and Palace—Boston and Chicago M. A. M. Allotments.

If ever there was any doubt concerning the ability of the Automobile Board of Trade to fill both Madison Square Garden and Grand Central Palace at the same time, it was quickly dispelled when on Thursday last, 3rd inst., allotment of space was made for the 13th annual automobile show which is to be held concurrently in the two buildings and for which one ticket of admittance will suffice.

Altogether there were 490 applicants for space. Of this number, 87 are manufacturers of pleasure cars, both gasolene and electric, and 403 are makers of parts or accessories. Last January, in the two buildings, there were just 100 exhibitors of pleasure cars represented, which, with 398 exhibitors of accessories, brought the grand total up to 498, or 8 more than have signed up for the combined show next January. But though the list for the coming show thus is slightly shorter than it was for the last show, it is a very little shorter and there scarcely is any doubt but that belated applications for space from manufacturers will cause the present list to overtop the last one by a goodly margin. The pleasure car week of the show will be opened on January 11 and the two buildings together will house the following cars:

Oldsmobile, Lozier, Stoddard-Dayton, Oakland, Flanders, Franklin, Stearns, Pope-Hartford, Stevens-Duryea, Peerless, Locomobile, Mitchell, Winton, Cadillac, Buick, Packard, Hudson, Maxwell, Overland, Pierce-Arrow, Chalmers, Reo, White, Cartercar, Warren, Marmon, Garford, Columbia, Moline, Thomas, Premier, Pullman, Alco, Jackson, Mercer, Auburn, Haynes, S. G. V., Cunningham, Knox, Moon, Matheson, Selden, National, Abbott-Detroit, Velie, Imperial, Cole, Interstate, Case, Hereshoff, Krit, Cutting, Kissel, Paige-Detroit, Speedwell, Pathfinder, Austin, Regal, Buffalo electric, Flanders electric, Columbus, Metz, Studebaker, Fiat, Hupmobile, Kline, Henderson, Michigan, Benz, R. C. H., Bergdoll, Stutz, American, Rambler, Ohio, Crow, Edwards, Atlas, Lenox, Davis, Paterson, Marathon, Havers, Westcott, Only, and Marion .

As usual, the Motor and Accessories Manufacturers, Inc., allotted the space opportioned to it not only for the New York show but for Chicago and Boston exhibitors as well, dealing, of course, only with its members and not with the unaffiliated accessory manufacturers. Of the 202 members to whom space was allotted, 111 will be represented in Madison Square Garden during both the pleasure car and commercial vehicle weeks; 47 will be represented only during the first week. Twelve members have signed up for both weeks in both buildings and six for one week in both buildings. In Grand Central Palace, 16 will be represented for both weeks and 10 for the first week only. For the Chicago show, 110 have been allotted space for both weeks and 39 for the first week only. For the Boston show 37 have taken space for both weeks, 35 for the first week only, and 2 for the second week only.

Eighteen More Enrolled in M. A. M.

Eighteen applicants were elected to membership in the Motor and Accessory Manufacturers, Inc., at the meeting of the board of directors held in the organization's New York offices on Friday last, 4th inst. They are as follows: Bijur Motor Lighting Co., New York, N. Y.; Endurance Tire & Rubber Co., New York, N. Y.; Edward G. Budd Mfg. Co., Philadelphia, Pa.; Brown & Sharpe Mfg. Co., Providence, R. I.; Hartford Machine Screw Co., Hartford, Conn.; Simms Magneto Co., New York, N. Y.; Ignition Starter Co., Detroit, Mich.; Walpole Rubber Co., Boston, Mass.; New Jersey Car Spring & Rubber Co., Jersey City, N. J.; Hess Steel Castings Co., Bridgeton, N. J.; Schoen-Jackson Co., Media, Pa.; Gould Storage Battery Co., New York, N. Y.; New Miller Carburetter Co., Indianapolis, Ind.; Marathon Tire & Rubber Co., Cuyahoga Falls, O.; Electric Auto-Lite Co., Toledo, O.; Baldwin Steel Co., New York, N. Y.; Pittsburgh Model Engine Co., Pittsburgh, Pa.; Garage Equipment Mfg. Co., Milwaukee, Wis.

Corporation Takes Over Poyer Truck.

Due to the retirement of W. S. Carpenter, the firm of D. F. Poyer & Co., of Menominee, Mich., which built motor trucks on a comparatively small scale, has been made into a corporation of the same name with $75,000 capital stock. Its officers are: D. F. Poyer, president and manager; Fabian Trudell, vice-president, and H. T. Emerson, secretary and treasurer. The business will be continued on the former lines but on a larger scale.

Pathfinder Gets Into Great Britain.

To handle the Pathfinder car, made by the Motor Car Mfg. Co., of Indianapolis, the Pathfinder Co., Ltd., has been organized in London and has opened up at 12 Heddon street. Originally the Pathfinder was introduced into Great Britain by Claude M. Nankivel, of London.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve To Place Many Workers In New Places—Few Leave the Industry.

Benjamin A. Rhodes, superintendent of the Dayton Motor Car Co., of Dayton, O., has resigned that position. He had been identified with the Stoddard-Dayton organization for a number of years.

George H. Brown, sales manager for the Mather Spring Co., whose offices have been located in the Ford building in Detroit, has returned to the factory at Toledo, from which henceforth his efforts will be directed.

A. T. Carnahan has been appointed district manager for the Swinehart Tire & Rubber Co., with headquarters in Detroit. He succeeds S. G. Andrews, who resigned to enter the retail trade at Saginaw, Mich., where he will handle Studebaker automobiles.

W. E. Rice has been appointed sales and advertising manager for the Schoen-Jackson Co., of Media, Pa., which already has placed the Feps carburetter on the market. Previously Rice was associated with the Atwater-Kent Mfg. Works of Philadelphia.

Guy Vaughan, former engineer for Wyckoff, Church & Partridge, Inc., of New York, and partial designer of the car which bears his name, has joined the engineering staff of the Olds Motor Works, of Lansing, Mich. While skilled as an engineer, Vaughan is best known because of his fame as a racing driver.

A. N. Lawrence, former sales manager of the Motor Wagon Company, Detroit, has been appointed sales manager for the Ford Motor Company of Canada, with headquarters at Walkerville, Ont. H. Nelson Dunbar, who served as sales manager of the King Motor Car Co., also has become a member of the Ford staff. He, however, will be identified with the parent company in Detroit, where he will perform the duties of assistant sales manager.

Daniels Moves to Detroit and Expands.

W. Smalley Daniels, who for a number of years acted as manufacturers' agent in Boston, Mass., has removed his business to Detroit, Mich., where it will be continued. He also has formed the W. Smalley Daniels Co. of Michigan to take over the sales business of the Snyder-Harbridge Sales Co., of Detroit.

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THE MOTOR WORLD

PUBLISHED EVERY THURSDAY BY

The Motor World Publishing Company

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor

S. P. McMINN HOWARD GREEN
R. W. SHERMAN E. F. HALLOCK

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Advertising Manager
HOWARD L. SPOHN LOU McDOWELL

WESTERN ADVERTISING MANAGER
W. H. TRIPP, 1001 Ford Building, Detroit
GUS. H. JOHNSON

DETROIT, 1001 Ford Building CHICAGO, 1441 Monadnock Block
MAXTON R. DAVIES J. FRANK GILMORE

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NEW YORK, OCTOBER 10, 1912

GETTING THE MOST OUT OF SALESMEN.

Undoubtedly there are men who are salesmen or merchants by intuition. More of them, however, are the products of training or experience, and the need for training now generally is recognized.

No better evidence exists of such recognition than the systems evolved by not a few manufacturers of automobiles, which are designed to train their dealers in the way they should go, or in other words, to assist them to make sales, which is but another way of assisting them to become better merchants. An illustrious example of such a system, employed by one of the largest corporations in the industry, is dealt with in considerable detail in another column.

The dealer who makes the most of such systems cannot but become a better merchant. That many of them fall short of reaping the full results, however, is only too plain. They permit the assistance to stop short, that is, to stop at their own desks; they too often fail to allow their own salesmen to share the benefits. In fact, it is not too much to say that the average merchant depends too greatly on what may be termed the intuition of his employes. Rarely does he attempt to instruct them and thus to increase their efficiency. It is a too common failing of too many retail organizations when the business is worthy of being dignified by the term "organization," and it is largely responsible for the high average of mediocrity which prevails—for the preponderance of "order-takers" over salesmen.

Some men there are who are quick to profit by experience and any observation of their fellow-salesmen. There are more men who, if properly taken in hand and given some form of training, would develop into equally capable salesmen. Comparatively few employers consider such training worth while. Usually the first knowledge that he is lacking is conveyed to the salesman by notice of his discharge. Seldom is he ever then told or shown the methods by which he may mend his ways. Few men who have worked for a salary can recall any very numerous or very conspicuous instances when their employers more than casually pointed out to them how better certain tasks might be performed, or offered helpful suggestions or instructions. That is one reason why so many employes lack initiative and await "orders," or fear to take the initiative or otherwise exhibit self-reliance.

Excepting only the "born salesman" or the salesman by intuition, the average man requires instruction of some kind, and the man who sells either automobiles or automobile accessories is no exception to the rule. If more dealers displayed real interest in their salesmen, and trained them in the way they should go, the practice could not fail to result in that increase of business and profit which all merchants seek.

It is a fundamental of successful merchandising that salesmen should be told not merely what to do but how to do it. The men who possess the combined knowledge are the men who rise or have risen above the level of average salesmanship, and who have attained to higher things. Merely employing men and instructing them to "sell goods," or "sell tires," as the case may be, is not sufficient. If they are not instructed how best to sell them, and sales are lacking, a portion of the fault, at least, rests on the man who employs them, or on the man who is placed at the head of a particular department. Failure to do that sort of thing usually is the reason why men who fail in one place often make brilliant successes in other places. They possessed the latent ability but it required judicious and intelligent coaching to develop it.

On top of statistics showing record-breaking crops, the financial oracles who deal with such things report that in the matter of dividend distributions, the year 1912 will surpass 1911 by no less than $150,000,000. As dividends generally are considered to be "easy money," and saying nothing of the revenue derived from crops, there should be more money available for the purchase of automobiles than ever before, even when or where they are viewed in the light of "luxuries."

The first instalment of the articles dealing with the used car problem appear in this issue. The fact that the author of one paper is the president of one of the best known automobile manufacturing companies and the other a dealer in a small town, suggests the wide interest that prevails, and should inspire other men in similar stations to contribute their views.

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TWO MOTOR INSURANCE COMPANIES INCORPORATING

Prominent Men of Automobile Trade To Figure as Directors—Culmination of Long Effort—Dealers' Support To Be Sought.

Two years' work—most of which was performed by Ernest H. Greenwood, in Philadelphia, where the movement was originated by several of the most prominent automobile dealers—is about to culminate in the organization of two insurance companies of and for the automobile trade With the aid of Massachusetts capital, they are now on the point of being incorporated under the laws of New York State.

One is styled the National Motor Indemnity Co. and will be capitalized at $800,000 and will write insurance against loss or damage by everything save fire, including accident liability by owners. The second corporation will be styled the National Motor Insurance Co. and will be capitalized at $500,000; it will insure automobiles against fire, although its powers will be so broad as to permit the insurance of other goods as well.

The par value of the shares of each company will be $100. The Indemnity company will have a surplus of $400,000 and the Insurance company a surplus of $250,000, both capital and surplus being fully paid in cash in each case.

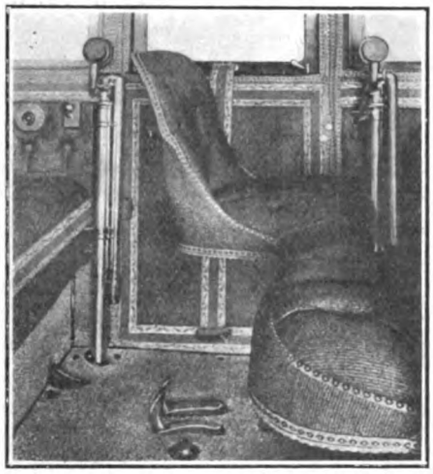
The ownership and control and management of both companies will be identical. W. J. Bryce will be chairman of the executive board of the new companies. The first board of directors will be constituted as follows: A. G. Batchelder, Alfred Reeves and S. A. Miles of New York; A. L. Pope of Hartford, Conn.; Winfred J. Foss, E. B. Jackson, Ernest H. Greenwood, A. E. Maltby and George W. Hipple of Philadelphia; W. P. Berrien of Pittsburgh; Chester I. Campbell of Boston; Thomas Henderson of Oberlin, O.; Hugh Chalmers and W. E. Metzger of Detroit, and William B. Joyce, James C. Colgate, William A. Tucker, Franklin Q. Brown, Alexander M. White, Charles H. Sabin, Henry E. Cooper, H. C. Wright, William A. Gaston, Eugene V. R. Thayer of Boston.

Messrs. Metzger, Chalmers, Henderson, Pope, Reeves, Miles and Batchelder will be recognized as national figures in the automobile industry, while Messrs. Foss, Jackson, Maltby and Hipple of Philadelphia, Berrien of Pittsburgh and Campbell of Boston are prominent in the trade of their respective localities.

Both of the companies have been formed with a view of actively interesting automobile dealers in the sale of insurance. It is believed that when they sell cars automobile dealers most readily can impress owners with the importance of insurance and at the same time sell insurance policies almost as easily as they now sell tires or accessories

Little Known Features of Well Known Cars

Usual practice with regard to the seating arrangements in electric coupes which are designed to carry four passengers involves the placing of the seats front and rear so that the passengers face each other Naturally the passenger who faces the operator partially obstructs the view of the road, which scarcely can be termed desirable.



OHIO ELECTRIC DUAL CONTROL

The designers of the Ohio Electric, however, have overcome this objection to the four-passenger coupe in a very ingenious manner—simply by placing a second set of controls—steering column, brake pedals and controller disk—so that they can be operated from one of the forward seats, which, as is shown in the photograph, is made rotatable so that the driver faces forward when he is guiding the car.

When but two passengers are in the car, the driver guides the machine by means of the rear controls, and the forward seat is turned around so that it faces the driver after the orthodox practice. When the car is taxed to its full carrying capacity, however, a key releases the forward controls and at the same time renders those positioned at the rear seat inoperative, and the driver drives from the forward seat with his view of the road unobstructed. Naturally the fourth passenger occupies the rear seat formerly occupied by the driver.



October 12, Poughkeepsie, N. Y.—Track races under the auspices of E. W. Powell.

October 12, Providence, R. I.—Track races under the auspices of E. O. Hustudt.

October 12, Chicago, Ill.—Inter-club run of the Chicago Automobile Club and the Chicago Athletic Association.

October 12, Salem, N. H.—Road races on the Rockingham Park course under the auspices of the Salem Automobile Club.

October 12, Springfield, Ill.—Track races promoted by the Illinois State Board of Agriculture.

October 12, Salem, N. H.—Track races promoted by the Rockingham Park Automobile Club.

October 14, Des Moines, Ia.—Start of the Iowa State Automobile Association's reliability run.

October 19, Narbeth, Pa.—Track races under the management of F. D. Hall.

October 21, Chicago, Ill.—Chicago Motor Club's reliability tour around Lake Michigan.

October 21-25, Chicago, Ill.—Chicago Motor Club's reliability run.

November 8-16, London, England—Society of Motor Manufacturers and Traders' annual show in Olympia Hall.

December 7-22, Paris, France—Paris Salon.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

NOTICE OF OWNERSHIP.

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MOTOR WORLD PUBLISHING COMPANY.
F. V. CLARK, Business Manager.

Sworn to and subscribed before me this 30th day of September, 1912.
JOHN T. DeMOTT, Notary Public.

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THE USED CAR PROBLEM

Two of the Solutions Offered

In Competition for Motor World's Cash Premiums of $50, $25, $15 and $10 for the Four Best Articles Dealing With the Subject.

By H. H. FRANKLIN, President H. H. Franklin Mfg. Co., Syracuse, N. Y.

The solution of the used car or second-hand "problem" gets down to just one thing and that is to handle it on a sound business basis.

And what is that? Simply this: in purchasing the used car (or taking it in trade, which is the same thing), pay or allow for it only such price as will permit its re-sale at a profit.

There is no other plan that will work. If all dealers would do it that way the whole problem would be taken care of. Any individual dealer who does it solves **his** problem.

Motor World may give the $50 to the first worthy charity solicitor who calls on you.

By GLENN H. FOOTE, Automobile Dealer, Ransomville, N. Y.

In treating the subject of used cars and their disposal, which every dealer will admit is one which must be reckoned with, let us grant the fact; and instead of trying to suggest a remedy for the situation, see if we cannot find a method of removing the cause.

For instance: If any dealer supposes that by aiding a would-be customer in disposing of a car, by taking it in trade or finding a buyer, he is broadening his market, he is mistaken; for nearly every used car disposed of fills somebody's need of an automobile for some time to come.

Again: The system of automobile education which teaches that a man of means must change his car every year, or at the most every second year, to prevent losing caste or to avoid being called the driver of an "old rattletrap," regardless of expense—as his wife changes her hat from season to season—is a fallacy which should be exploded.

When a farmer purchases a harvesting machine he expects to use it for its natural life, which is from ten to twenty years. Such machines have to work under most strenuous conditions and breakages are frequent—in fact, much more so than on an automobile—but if they were thrown on the market every second or third year after manufacture, it would certainly add a demoralization to the business which does not now exist.

The principal trouble is that the automobile industry has grown so fast, that like a growing boy it is out of all sense of shape and proportion.

If after all the good things said about the car by the salesman, the buyer receives a machine which is only suitable for him to use a couple of seasons, the industry will hardly stand the searchlight of reason for its economic existence, even if treated as a luxury. Would it not be wiser, by calling his attention to numerous examples, to show a prospect that he can get many seasons' satisfactory use from his machine if it is properly taken care of? To call his attention to adjustments provided and make him feel that regardless of any loose statements made by some "interested" repairman, the car can again be made to run smoothly, giving many miles of satisfaction to its driver, after it has reached a point where it needs overhauling?

So many "wooden" men are posing as "expert" repairmen, that the owner gets his used car from the shop, pays his bill, and then disgusted with its performance, registers a vow that he will sell it if possible, or give it away if necessary—with an even guess that he puts throught a combination of these two. With the possible exception of factory rebuilt cars, is not the above condition the rule rather than the exception? And is it any wonder that it is difficult to market this sort of "junk"?

What we need is more and better repairmen, those who have the ability and willingness to take an interest in the job in hand, from the owner's standpoint, and guard its various stages as an architect would guard the construction of a building for its owner.

Few owners will then feel it necessary to exchange cars, while their own is running in good condition, and the man who sells such cars can point with pride to the long and consistent record of cars which have come under his notice, instead of having to make excuses for the short duration on earth of some car which he may have sold, and which if nothing further, causes the purchaser to enter into his new relation with fear and trembling for his financial future.

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WIDE-AWAKE MERCHANDISING In the MOTOR TRADE

TERRITORY; SIZE VS. CULTIVATION.

There is such a thing as having too much territory just as there is such a thing as having too large a garden.

If a dealer can sell twenty-five or fifty cars in the immediate vicinity, it is much better than selling the same number over a widely scattered area. It costs less to sell them. A compact territory is usually much easier to work and always is more profitable.

One Ohio dealer, who is typical of a great many others, found that when he had made good in his own comparatively small territory it was an easy matter to get as much more as he wanted. This man employed one good salesman. He attends to the home territory while the salesman keeps on the road all the time, winter and summer.

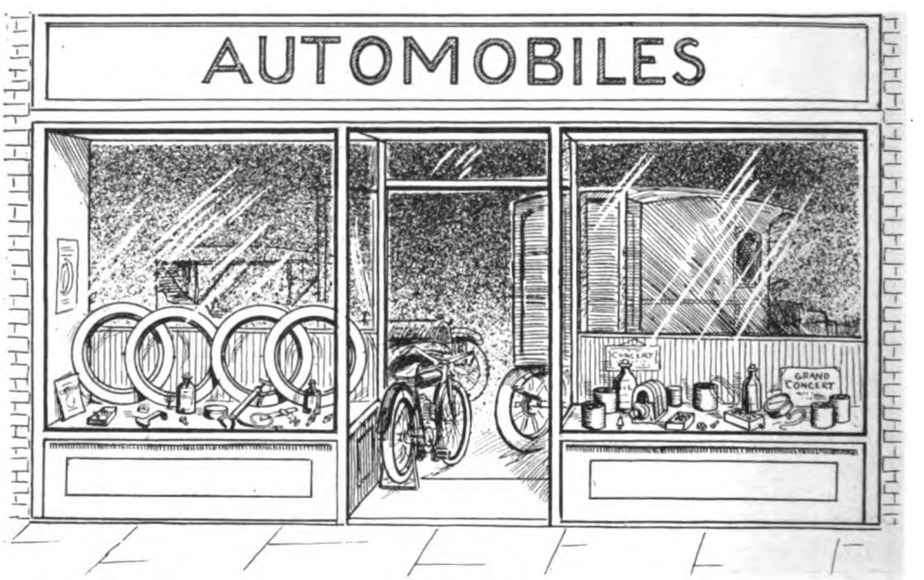
It takes nerve to pay the salary and road expenses of a man during the winter months, when cars are not moving out fast, but it paid this dealer—paid him big. Likewise this dealer discovered that the small dealer who makes good is the man who takes a little bit of territory and works it to a finish. Instead of one or two cars in a county, he sells fifteen to twenty-five in a season. And the more he sells, the easier it is for him to keep on doing a profitable business and the harder he makes it for competition.

Often the small dealer needs help—service help or sales help; hence the large dealer or wholesale dealer must leave himself enough margin to provide such help and service.

A big garden is a glorious prospect. But a small garden intensively cultivated is not so hard to keep in order, and, if carefully planned for successive crops, will outyield mere acreage. This is a picture of the territory question. The great thing is not the amount of territory but what you do with it—how many cars you are capable of disposing of in the territory.

WINDOW DISPLAY THAT DISCOUNTS.

Place: Toledo, Ohio; Jefferson avenue.
Scene: Window of Automobile Store.
Time: Morning of 26th day of September, in the year of our Lord Nineteen Hundred and Twelve.



TOLEDO SHOW WINDOWS AS "HORRIBLE EXAMPLES"

PROPERTIES.

Left Window: Four big tires, overlapping. Screen of flycloth for background. Cement, bottle of oil, tire pump, tire iron, car polish in bottle, and eight other articles struggling for attention.

Right Window: Background, one unwashed delivery car. Five cans of assorted washers, several cans of lock-nuts, likewise several boxes of cotter pins, two big bottles (apparently oil), speedometer, gas headlight tip, magneto, piece of wire, and enough other items to make up 22 different articles. One or two cards advertising concerts.

Doorway: Jammed by one motorcycle and rear end of unwashed delivery wagon. Only thin persons allowed in. Fat customers who seek admission, please call again.

Question: Could a larger number of different things be put into windows? Did the office boy do the trimming? Or were the windows trimmed at all?

Suggestion: Keep all cars on display clean. Cut down variety of window display about 80 per cent. Change often. Use neatly lettered window cards to advertise your own business; let the concerts advertise elsewhere and give you a chance. Keep windows clean.

KEEP OFF FLOOR SALES UNLESS INVITED IN.

It is bad business for the "boss" or anyone else to "butt in" on a salesman who is treating with a prospective purchaser.

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AWAKE NDISING WORLD

There is such a thing as being too eager to close a sale. Where anxiety is manifested the prospective buyer is more than likely to become chilled. The good salesman will move calmly and confidently to the end.

Sometimes a fellow-salesman on the floor grows nervous, and thinking the other fellow is too slow, he moves up, wedges abruptly into conversation by asking some such pointed question as "Did you notice the Turkish cushions?"

This is not the method of good salesmanship. The trained man will wait till he is invited or signaled. Then he gets on the job with both feet.

DON'T BUY PROSPECTS; DIG THEM UP.

The fellow who sneaks into your office, tells you that he has a prospect for your car, and wants to know how much you will give him for the name, ought to be rewarded with a pointed invitation to make himself scarce. In nine cases that is exactly what he has earned—not one jot or one tittle more.

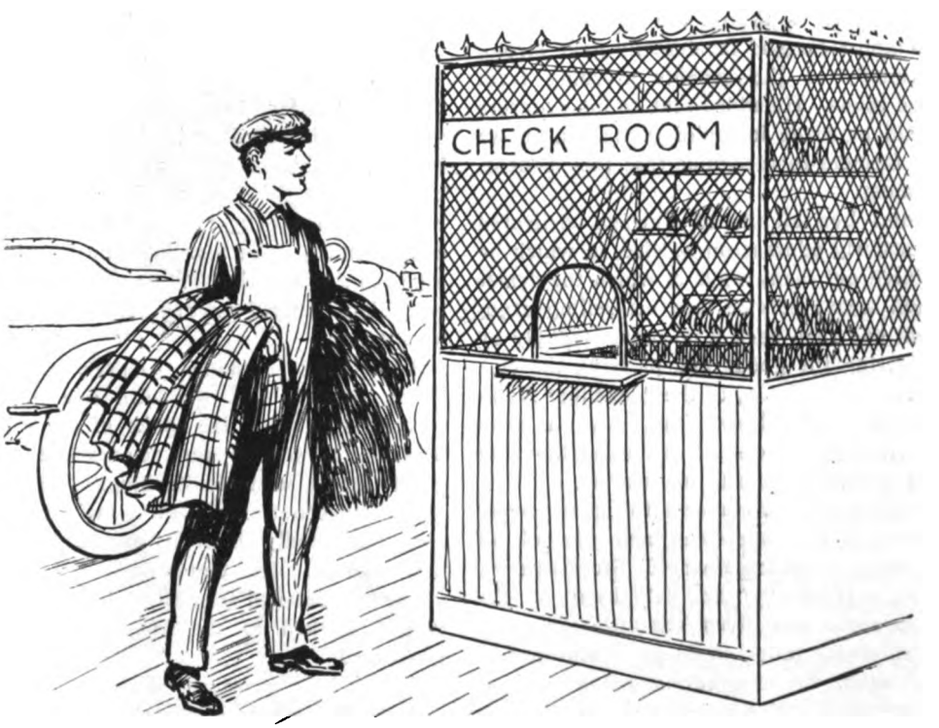
Agreeing to pay commissions for a name, only to find that it is a prospect you have been working on for months has happened a bit too often. It is going to happen less in the future. Dealers are getting posted on the methods of business fakers. It is for the good of every dealer that they be eliminated for all time.

The commission that is allowed by the manufacturer belongs to the dealer. Out of it must come selling expense, store rent, overhead, salaries and, incidentally, a reasonable amount of service. If, in addition, the dealer has to split with someone for a name or a boost, there is little real profit in the sale.

Alert, active dealers find no difficulty in getting names of prospects. It is simply a case of "digging for information" and watching. The best prospects are not those that everyone knows about, but the ones the other fellow never thinks of. Go after them all, but go hardest and fastest after the "pure gold" prospects you yourself have dug up.

PROVIDE A CHECK ROOM FOR LOOSE ARTICLES.

Hyslop Brothers, of Toronto, Canada, who sell the Cadillac, have one of the most completely equipped garages in the Dominion, and there is one unusual feature of the establishment which instantly commends itself to transient customers—that is, their check-room.



CHECK ROOM IN HYSLOP GARAGE IN TORONTO

When a tourist drives in for storage overnight all of his loose extras, such as spare tires, robes, packages, etc., are removed by the attendant and stored in a checkroom. There never is any trouble finding the articles checked and the count always is right. The tourist sleeps peacefully and quietly, knowing that his valuables are safe.

In the morning, he presents his checks and receives his goods and chattels and goes on his way rejoicing over having found one of the most business-like garages on the continent. No charge is made for this convenience despite its obvious value.

Signs reading "We are not responsible for anything left in car" are too common in garages. But most of them fail to provide either a check room or lockers. Such a move as that made by the Hyslop brothers certainly is a step in the right direction; it is not going too far to say that it is even worth charging for and worth paying for.

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AUTOMOBILE SALES ASSOCIATION FORMED AT INDIANA CONVENTION

(Continued from page 5.)

dealer and is losing money because he had to give service on old cars out of the profits which had been enjoyed by a dealer of other days.

One of the addresses that made a great hit was made by E. Le Roy Pelletier on the "point of contact." Pelletier was in his best style and gave some practical illustrations of how the dealers' salesmen often fail to hitch up with the best laid selling and advertising campaigns. He emphasized the fact that the dealer is of utmost importance as he is the final point of contact with the public, and upon him and his salesmen depend everything. C. W. Kettering, of the Dayton Electrical Laboratories Co., urged that the dealer and his salesmen study more the story of the motor car and its evolution from crude metal into a highly sensitive and efficient mechanism, suggesting also that in a similar way interest can be created by an intelligent salesman in the story of rubber from the Amazon to the finished tire.

Charles A. Bookwalter, former mayor of Indianapolis, spoke on the development of the motor car and incidentally gave strong testimony to the benefits accruing from good roads. He added that no big progress would be made in building roads until we got farmers to recognize that they benefited most.

John Lee Mahin, of Chicago, delivered a masterly address on service, in which he pointed out many ways in which the dealer could weave service into his selling argument and then back it up more strongly by delivering the goods and pleasing the customer. J. G. Jones, of the Alexander Hamilton Institute, New York, gave a clean cut strong address on salesmanship that went straight home to his hearers.

During the noon recess the guests were driven to the Speedway and partook of luncheon, at which Harry C. Stutz was the host; incidentally, an exhibition of the Stutz speed was given, the little car going seventy-nine miles an hour. Returning to the hotel, the convention reconvened at 2:30. W. D. Nesbit, who previously had acted as chairman, being replaced by J. G. Monihan, of the Premier company.

The first speaker of the afternoon was William Boyd, of Curtis Publishing Co., Chicago, who said that in addition to the other points of quality and construction the dealer should rigidly inquire into the manufacturer's advertising policy and make his decision on the basis of his reply. Boyd said advertising was essential to salesmanship and showed why he said that the greatest potential buying power was that created by advertising. John C. Wetmore, of New York, urged dealers to cultivate local newspaper men and to advertise frequently as possible, but above all things to use large space even if they had to use it less often.

C. W. Seiberling, of Goodyear Tire & Rubber Co., remarked that he was head of the "department on visions"; in other words, it is his business to peer into the future, and he prophesied that in five years the automobile and accessory industries would surpass in volume the annual earnings of all railroads put together. He said that in the dealers' own hands rests the remedy for any trouble he might be having and urged them to closer study of problems. He said that the salesmen of the future will be higher grade and will talk steels, for example, back to the mines, and tires back to the forest.

The addresses all emphasized honesty, sincerity, integrity and belief in and support of manufacturers' policies, elimination of knocking, and the creation of a boosting spirit, as necessary for selling success; also the necessity of dealers co-operating with one another and maintaining list prices, and of their being guided by wider experience of the manufacturer in the way of exploitation.

The important thing about the convention was the fact that it was able to draw about one hundred and fifty dealers and that the subjects were all handled in a broad, thorough manner, without any cars being mentioned by name. There was, of course, much to be learned about conducting such a convention, but as a whole it was splendidly handled and reflected credit upon its sponsors.

Advertising Manager Depree, of the Remy Electric Co., was also one of the forceful speakers. He spoke of the salesmanship of service and remarked that a great many misunderstandings could be straightened out and business facilitated by courtesy, kindly interest and diplomatic conversation. He emphasized the latter virtue and detailed several instances of how it had worked to the satisfaction of all concerned.

Eight Extensions of Overland Factory.

Indicating the prosperity of the Willys-Overland Co., there are in process of construction at the present time no less than eight additions to its plant in Toledo. The largest of the group is a five-story concrete building 102 x 127 feet in dimensions, which will be utilized by the Kinsey Mfg. Co., one of John N. Willys's properties.

Other constructions which are now under way include a two-story concrete building, 50 x 140 feet, to be used as a repair shop; a three-story concrete building, 60 x 80 feet, for the varnishing and trimming departments; a three-story concrete building, 40 x 100 feet, for polishing, plating, pattern making and pattern storage; a two-story frame building covered with iron siding, 65 x 216 feet, for wheel painting and trimming; a brick addition to the boiler room, 34 x 48 feet, for housing two 300-horsepower boilers; a one-story frame iron-covered addition to forge shop, 32 x 55 feet, and a one-story building of steel and brick construction, 70 x 200 feet, for blacksmith shop.

Brockway Completes Organization.

The Brockway Motor Truck Co., of Cortland, N. Y., which is an outgrowth of the Brockway carriage and wagon business, in Homer, which is near by, has completed its organization by the election of the following officers: George A. Brockway, presiden; C. S. Pomeroy, vice-president; F. R. Thompson, treasurer and general manager. The company, which is capitalized at $100,000, will produce trucks in three models—1,000-1,500, 2,000-2,500, and 3,000-4,000 pounds capacity, respectively. They will employ a three-cylinder, two-cycle, air-cooled motor, and, in the language of their manufacturers, will be "sold at a price that the average business man can afford to pay." The production of the Brockway trucks, as they will be styled, is in the hands of Rodman S. Reed, who is chief engineer and superintendent of the company, and who previously filled the same offices in the Chase Motor Truck Co., of Syracuse.

Elkhart Stockholders' Mortgage Valid.

After much involved legal turmoil, the court has declared valid the $50,000 mortgage held by stockholders of the Elkhart Motor Car Co., of Elkhart, Ind., which was adjudged bankrupt in October, 1911. Previous to the bankruptcy proceedings the company was sold for $70,000 to George G. Schofield, who then mortgaged the plant back to the company. Later, in May, 1911, the factory was again sold and it was at that time that certain stockholders filed the petition in bankruptcy, while other stockholders instituted a suit to foreclose the mortgage. A bitter fight resulted in which charges of conspiracy and threats of arrest were made, but nothing came of it.

Republic Ratifies Increase of Capital.

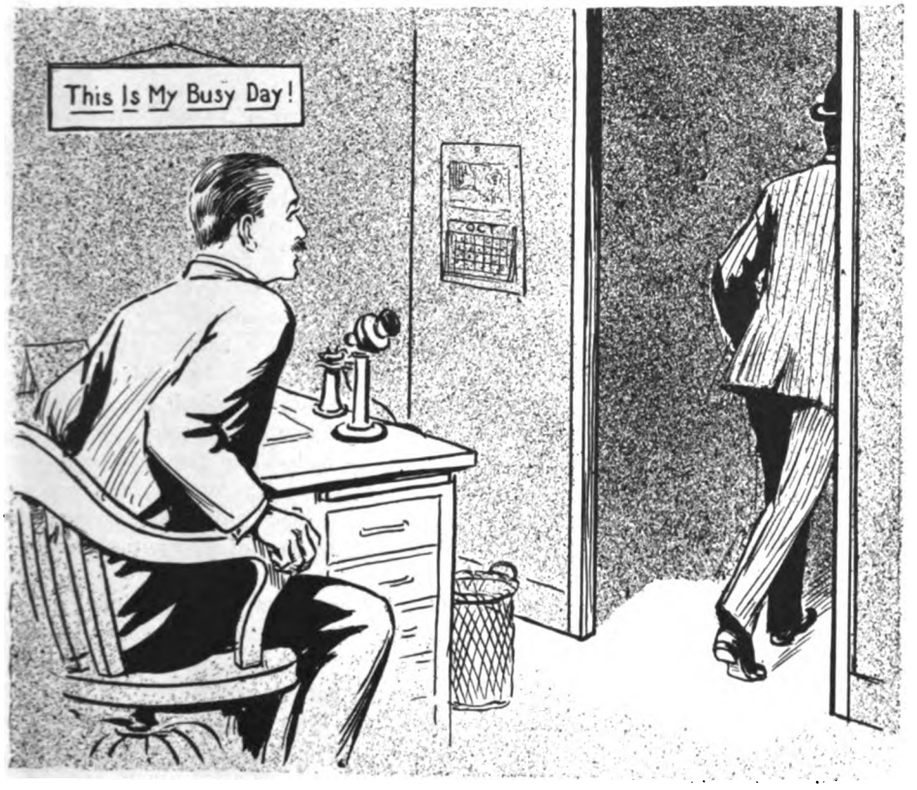
Stockholders of the Republic Rubber Co., of Youngstown, O., ratified the plan of the directors for an additional issue of $5,000,000 preferred stock, the receipts from the sale of which will be employed in the establishment of a reclaiming plant and other extensions of the business. The new issue makes the total capital of the Republic company $10,000,000.

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REILLY DISCUSSES THE "I'M BUSY" SIGNS

Drops into the Sales Manager's Office and, Finding One on the Wall, Delivers Himself of Some Pointed Opinions—Placards That Cover Wall Space But Give Offense.

It was far from a busy day with the Sales Manager; he had cleaned up a big week's work by Friday night, and on the Saturday morning in question was just finishing clearing away the tag ends of the week's doings and, as office rules permitted smoking, he just had lighted his pipe and leaned back in his chair for a few moments of meditation when the door opened. The Sales Manager looked up to see who had disturbed his mental soliloquy and, as he had surmised from the snappy footsteps on the hallway runner without, he beheld Reilly, his star dealer, filling the doorway.



"REILLY!" HE CALLED, "REILLY, COME BACK HERE"

Reilly Reads the Printing On the Wall.

The Sales Manager had a greeting on his lips, having removed his pipe for that purpose, when Reilly, seeming to glance not at the Sales Manager but over his head and beyond at the wall, said apologetically, "O, I beg your pardon, Jim; sorry to intrude," and quickly shutting the door behind him started back toward the street where his car was standing.

The Sales Manuager was on his feet and out the door in an instant.

"Reilly!" he called. "Reilly, come back here."

Bringing Back the Departing Guest.

But the little dealer never turned or seemed to hear but kept on his way, smoothing his straggling hairs preparatory to putting on his hat. The Sales Manager couldn't account for such behavior. "Reilly," he repeated, and when vocal summoning did no good he increased his speed and at the door grabbed the dealer by the arm. "What's the matter with you this morning? Aren't you going to stop a while? What's your hurry?"

"I'm in no hurry,' 'answered Reilly.

"Well, come back and get over your grouch."

"I have no grouch."

Explanations Are in Order.

"Well, come back and get over it, anyway. What made you act like that?"

"I thought you were busy," replied Reilly, feigning an astonished look.

"Busy?" exclaimed the Sales Manager; "I haven't a thing in the world to do this morning."

"You said you were busy," retorted Reilly.

"Me? I said nothing of the sort."

"Well, the sign on the wall said so and you put it there," was the dealer's follow-up.

"That sign? Aw, forget it!" laughed the Sales Manager. "You shouldn't believe in signs."

Placards That Are Meaningless.

Back in the office Reilly pretended innocence of signs in general and explained that whereas the sign had not been there on the occasion of his last call and was there when he called this time he naturally assumed that it was hung up on busy days only and therefore was a warning against visitors who called on unimportant business. The sign read

> **This Is My Busy Day**

and according to appearances and the Sales Manager's own admission the sign lied.

"That doesn't mean anything," said the Sales Manager. "A fellow gave it to me and I hung it up there. I think it adds a touch of aggressiveness to the office."

"Maybe it does," was the answer, "but unless you believe in making yourself aggressive by offending callers, I'd advise you to take it down."

"What harm does it do?" asked the sign's owner.

Reilly On the Ethics of Signs.

"Maybe none at all, if you care to see it that way," answered Reilly, "but you'll never find one in my place. I may be busy, but I'm never too busy to talk business of any kind and I do not intend to offend any caller by making him think I want him to cut his call short. If he tries to drag things along on unimportant matters and I really am busy I tell him so and ask him to call again some time. But no

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signs in my office! If I have anything to tell a man I feel that I am capable of telling him without putting up bulletins."

"Don't you think your ideas are a bit radical on that point?" asked the Sales Manager as he smiled skeptically.

"You may think so; but let me tell you my experience with signs. To start off with, putting up a sign like that is like hanging one on my demonstrator saying 'This Is an Automobile.' If it is an automobile people ought to be able to recognize it from appearances, and if they can't then I am willing to concede there is something the matter with the thing. If you are busy, do you think you need to tell people so? Don't you think that a man who comes in here and sees you up to your neck in work can tell you are busy without you hanging a sign around your neck saying that you are a busy man. Just because you're a good friend of mine and don't dare get mad at me I will say that those signs make me sick—not ill, but sick!

Early Experience With the "Motto" Fad.

"When I started in business there were times when I was as busy as you are this morning, but I liked to believe I was a wildly rushing business man, so one day when I was in a book store and spotted a sign I paid ten cents for it and put it up in my office. Mine read

My Time Is Valuable. Is Yours?

which may or may not have been true.

"I felt real perky every time I saw that sign; it made me think my time was valuable, but, heaven knows, there were times when I had a hard job making myself believe I was busy, but since the sign said so I thought it must be true. One day a business man whom I knew by sight hurried into the office. I was about twenty-five years old then; he was twice that. He opened the office door, opened his mouth to speak and then closed both his mouth and the door—if I remember correctly; both of them slammed. I couldn't move for almost a minute, the shock was so sudden. I wasn't accustomed to having customers act that way. However, I gradually recovered my composure and decided that as important a business man as I was ought not to be flustrated.

Killing Off a Live Prospect.

"True to the mental promise I had made myself, I forgot all about the incident. But one day I learned what it was all about. A friend of mine came to me and told me. The man who made such a sudden dash out of my office had told my friend. He came in intending to buy a car, or at least look the line over. He was one of these self-made men and really was a very busy individual. He always worked at high pressure and was a little high strung; so when he saw the sign on my office wall, intimating that my time might be more valuable than his he got hot and left on the spur of the moment. And he never came back, either; and I might add that he bought a car—but not of me.

"That was only one of the many things I learned in my business bringing up. That sign came down. Its fall was on the principle that it certainly didn't do any particular good and might do some harm. It's like an unfriendly dog; he might wander around for years and do neither good nor harm, but the chances in favor of damage are too great. Probably not one man in ten would have acted as my customer did, but if even one man in one hundred who comes into my place buys a car it's a big help to my business.

Signs That Say What the Owner Wouldn't.

"It is a peculiar thing about business offices to-day; they seem to be badly smitten with this motto fad. The cards say everything from 'Be Brief' and 'Smile, Damn You, Smile' to 'I'm Married.' The first two you wouldn't dare say to a stranger if he walked into your office and the last one is a confession that would make you feel foolish if you were compelled to repeat it like a parrot to all your visitors. It even may be funny, but lots of 'funny' men don't need 'I'm Married' signs; their looks are enough.

"You put up that sign because you were thoughtless; you never considered whether it did good or harm. You fancied it gave a 'punch' to the office. Of course, I was only kidding when I turned on my heel as I saw the sign, but it only shows what some men may do and I am darned sure a lot of men would like to do. You yourself have seen those signs in offices where you have called, and I'll guarantee that if you stop to think you will admit that they never appealed to you when they were on some other man's wall and that they made you feel uncomfortable whenever one stared you in the face. Am I right or wrong?"

The Wind-Up in the Waste-Basket.

"Well, you are at least half-right, anyway," responded the Sales Manager. "I do recall the sensations I experienced when entering offices and seeing such things hanging before my face."

"Then the sign's a liar," said Reilly.

"In the Ananias Club sure!" answered the Sales Manager, and he made no protest as Reilly lifted the offending pasteboard from the pin that held it and gingerly deposited it in the waste paper basket where it belonged.

Goodrich Facilitates Tire Repairing.

To assist understanding of the subject, the B. F. Goodrich Co., of Akron, O., just has issued "A Manual of Tire Repairing," which is so illuminative that it cannot well fail to fill its purpose and to prove of real assistance to every man who has to do with the repair of tires. It contains detailed instructions for performing practically all of the operations that are included in the category of ordinary tire repairs, such as vulcanizing, retreading, splicing, repairing blow-outs and punctures, single tube work, the handling of fabric and rubber, etc., a profusion of illustrations making clear the various processes. The manual is as handsome typographically as it is full of instructiveness.

Feature of a Texas "Sales Day."

Byers, Tex.—a suggestive name—recently inaugurated what was termed a "sales day," on which local merchants decorated their stores, paraded their wares and generally created a hurrah designed to attract buyers. One of the most striking features of the turnout was a display by the Wheeler-Davis Co., which handles the Abbott-Detroit car in Byers. In tandem fashion the Abbott dealers hitched three wagons—a surrey and two buggies—to a 30 horsepower car and loaded into them 78 men, women and children. The automobile then pulled the heavy load with ease, to the amazement of the Texans who witnessed the feat.

Ohio Chauffeurs Organize for Protection.

For the protection of both owners of automobiles and the chauffeurs themselves, which object is susceptible of wide interpretation, Ohio drivers have formed and duly incorporated the Ohio Chauffeurs' Protective Association, with headquarters in Cincinnati. The following officers were elected: President, Grover Bennett; vice-president, Charles Eckert; secretary, Roy Engleman; treasurer, George Puls; sergeant-at-arms, Dick Harms; publicity bureau, Grover Jobe.

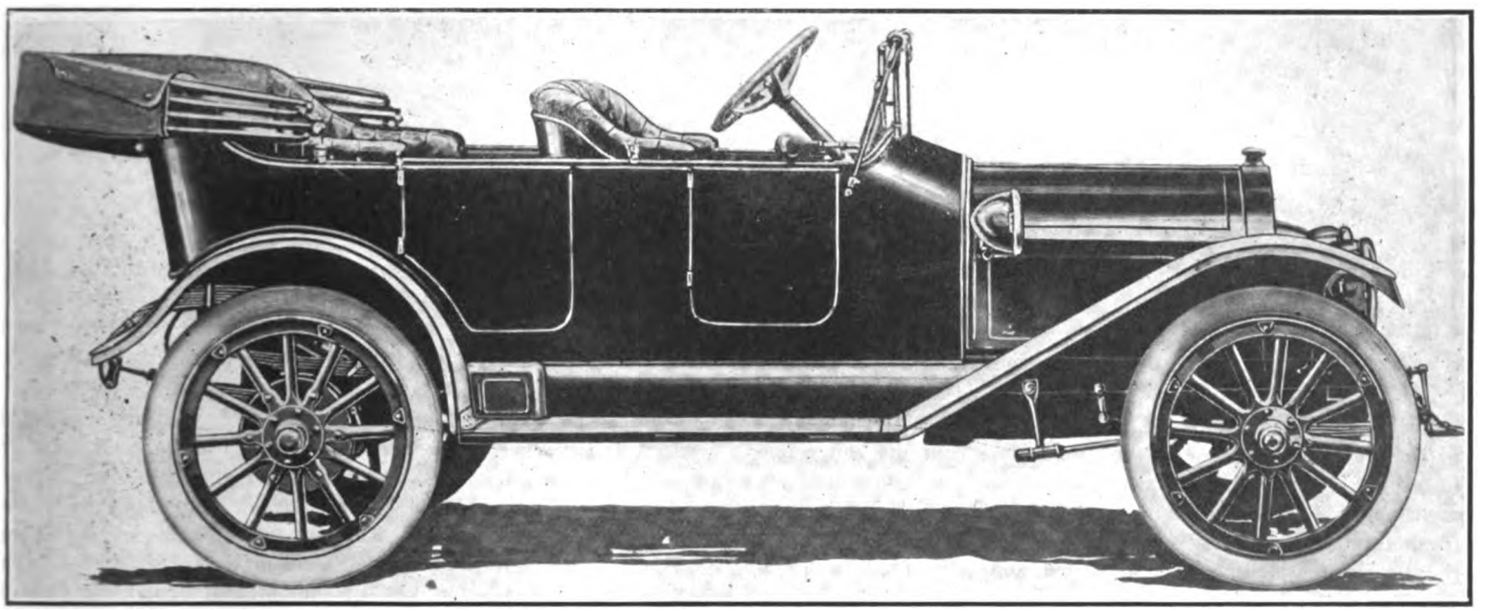
Teamsters Strike Against Motor Trucks.

Certain of the teamsters in Chicago have assumed an aggressive attitude in opposing the introduction of motor trucks in place of horse-drawn vehicles, the first emphatic action being taken a week ago to-day, 3rd inst., when 30 teamsters employed by the Chicago Consolidated Bottling Co. refused to take out their teams. The company recently purchased six motor trucks and the teamsters demanded that the work of one truck be restricted to the work of one team.

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CUTTING CONCENTRATES ON SINGLE CHASSIS

Unit Power Plant on Three-Point Suspension a New Feature—Improved Disc Clutch, Longer Wheelbase and Bigger Tires on Revised Model.



CUTTING FIVE-PASSENGER TOURING CAR OF WHICH THE NEW 40-HORSEPOWER CHASSIS IS THE BASIS

Concentration of energies and expansion of facilities were the motives that governed the Cutting Motor Car Co., of Jackson, Mich., in deciding upon the scope and character of the line of Cutting cars for the season of 1913, and, accordingly, there has been an enlargement of factory capacity, while the line, which in 1912 consisted of six models on three chassis, has been reduced to two models on a single chassis.

The chassis has a four-cylinder motor, rated at 40 horsepower and mounts a two-passenger roadster body of the approved type, with deep skuttle dash, oval tank behind the seat and a large carrying compartment in the extreme rear, and a five-passenger touring body. The wheelbase is 120 inches. The two models are known as the A-40 roadster and the B-40 touring car.

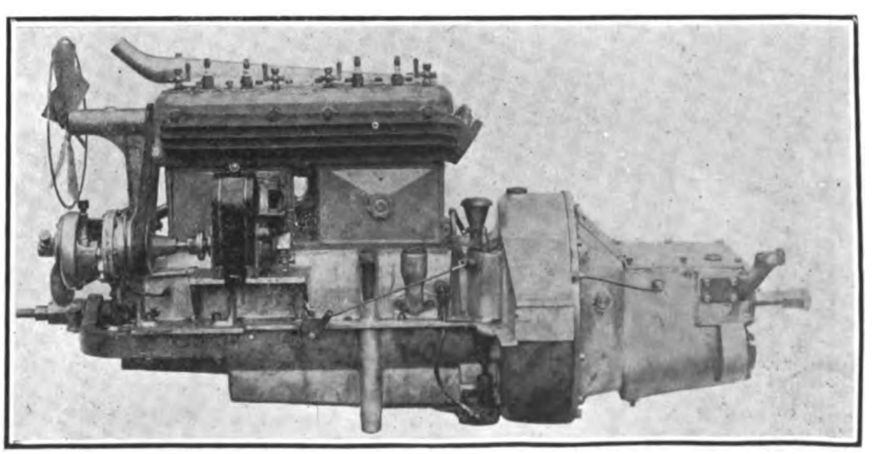
The chassis includes many of the mechanical features of the 1912 machines. There is this important difference, however; the motor and gearcase now are united in a unit power plant, and three-point suspension has been adopted. Another change of some importance consists in the use of a greater number of plates in the multiple disk clutch; last year's clutch had seven plates, while the number now is 15. The plates run in a bath of oil circulated through the clutch from the gearcase.

The motor is of the L-head type, all the valves being on the same side and actuated by eight cams on a single camshaft. The cylinders are cast en bloc, and have a bore of 4 inches and a 5-inch stroke.

Lubrication of the motor always has been a strong point in the Cutting, and no reason has been discovered for making any change of moment in the new model in this respect. Splash is tabooed entirely. Instead, there is an oil reservoir cast under the crankcase, communicating with the case by means of a drain opening covered with fine gauze. From this reservoir oil is drawn by a gear pump, located on the outside of the lower part of the crankcase and driven by spiral gears from the camshaft, and is forced through a duct formed in the metal of the crankcase to three smaller ducts, one leading through each of the webs in which the main bearings of the crankshaft are carried. The crankshaft is drilled out to carry the oil to the crankpins, and the surplus, forced out of the bearings, is thrown on the cylinder walls, the cams, camshaft bearings and all other interior parts.

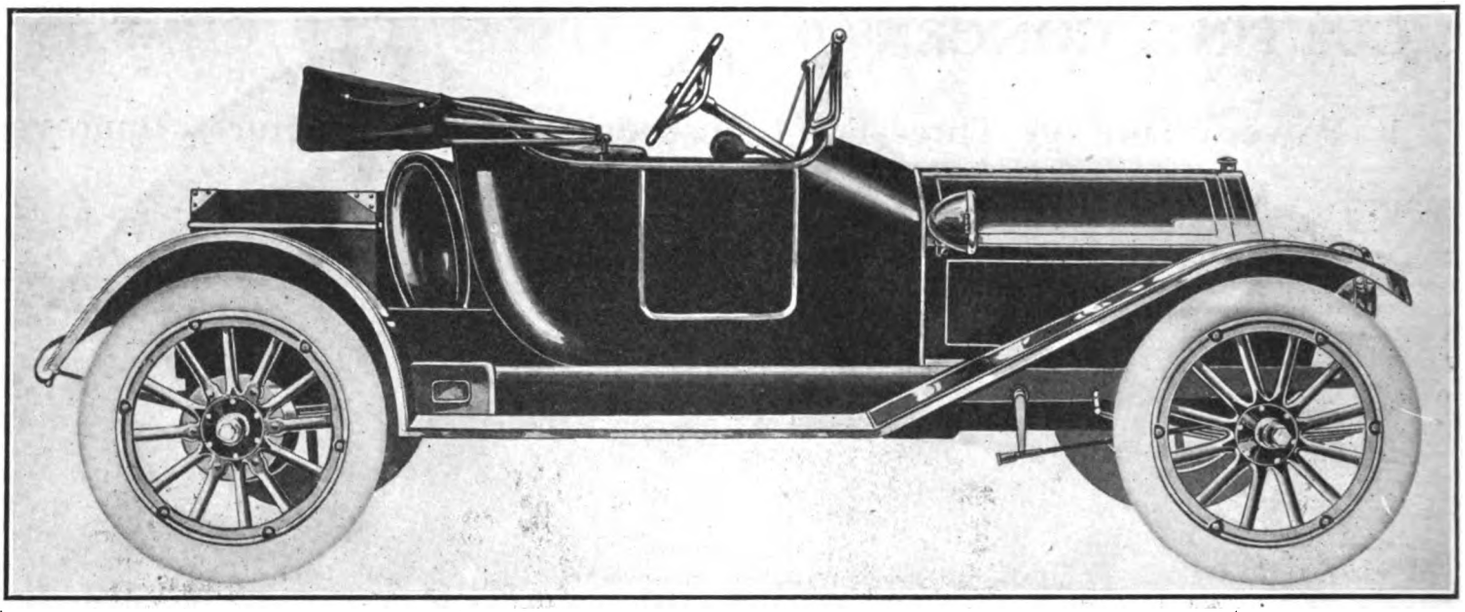
The gearset provides for three forward speeds, selectively controlled, and the gear shafts are mounted on annular ball bearings throughout.

A feature of the frame construction that



EXHAUST SIDE OF NEW CUTTING UNIT POWER PLANT

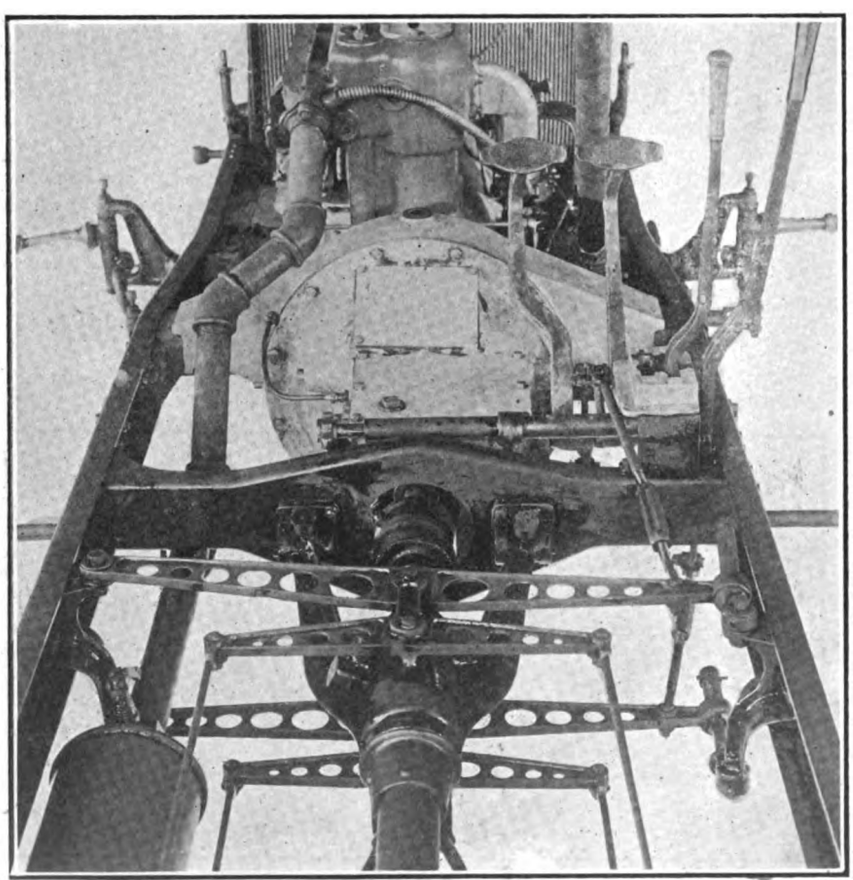
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NEW CUTTING MODEL A40—A 40-HORSEPOWER ROADSTER REVEALING SYMMETRY OF OUTLINE AND CLEAN DESIGN

indicates an intimate knowledge on the part of the Cutting designers of the exigencies of repair work, overhauling and replacements, is that the cross frame to which the torsion tube is anchored is not riveted to the main frame members, but is bolted, and can be removed. By removing the pivot pins, dropping the torsion tube and removing the frame bolts, the cross frame can be moved to the rear four inches, permitting the gearset to be removed by taking out the cap screws by which it is secured to the crankcase casting, obviously a noteworthy feature.

The rear axle, which is of the semi-floating type, is mounted on Hyatt roller bearings, and the casing is held in alignment by rods anchored near the front end of the torque tube and forming a triangle. The front springs are semi-elliptics 40 inches long and the rear springs scroll three-quarter elliptics 48 inches long.



CUTTING CHASSIS SHOWING BRAKE EQUALIZING SYSTEM

Wood wheels of the orthodox artillery type are employed, being built of second growth hickory; all spokes are 1¾ inches in diameter. The tires are 36 x 4. The brakes, of the internal expanding and external contracting types, are equalized through two sets of levers of light but very strong truss construction, giving great leverage and easy control of the car whether the emergency lever or the service pedal is used. The equalizing system for the foot brake is carried just above the fork of the torque tube, and the emergency brake equalizers under the fork. Worm and gear steering mechanism is fitted; the hand wheel, which is 18 inches in diameter, is of black walnut, with the spark and throttle levers on top. The rim is notched to afford a good grip.

The complete car has the low-hung, compact, clean appearance that is so much desired by those who are particular in the matter of appearance. The running-boards are clear, and neatness in appearanec is enhanced by placing the gear shifting and brake levers inside the body, on the right side. Black and nickel finishes are used.

In addition to being fully abreast of the times in mechanical construction, the Cutting cars are well taken care of in the matter of equipment; in all models the outfits are well worthy of the well-worn adjective "full." Top with side curtains, top boots, windshield, tire holders, an extra demountable rim, complete set of oil and acetylene lamps, acetylene gas tank, robe and foot rails, tools, jack, pump and tire outfit are provided. In addition, all models are fitted with motor starters and with electric lamp lighters operated from the dash.

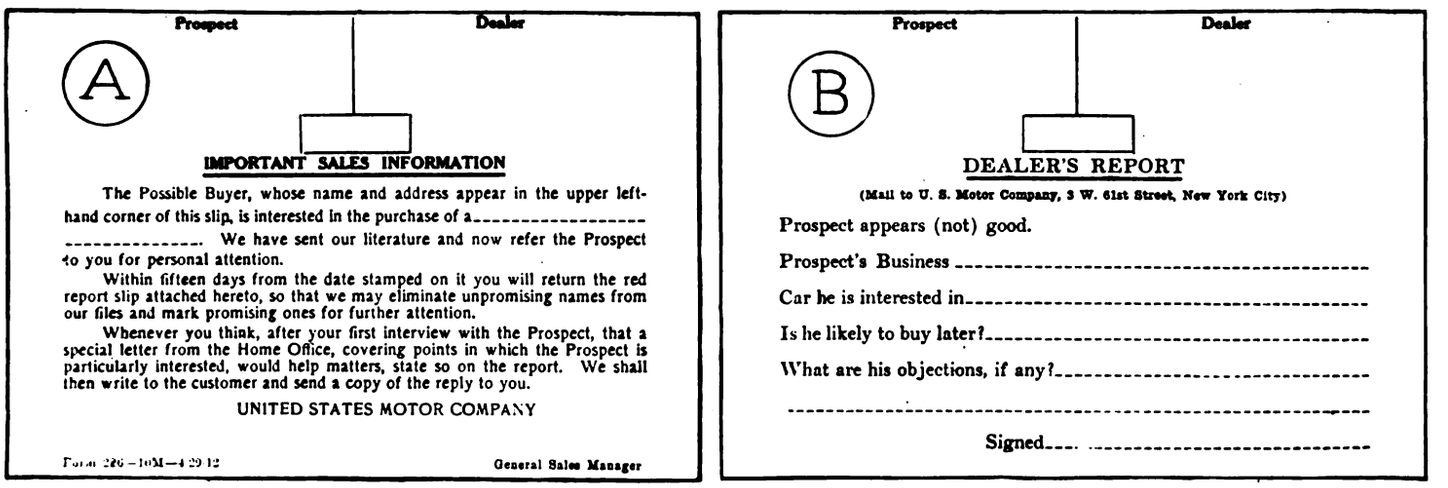
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ASSISTING THE DEALER TO MAKE SALES

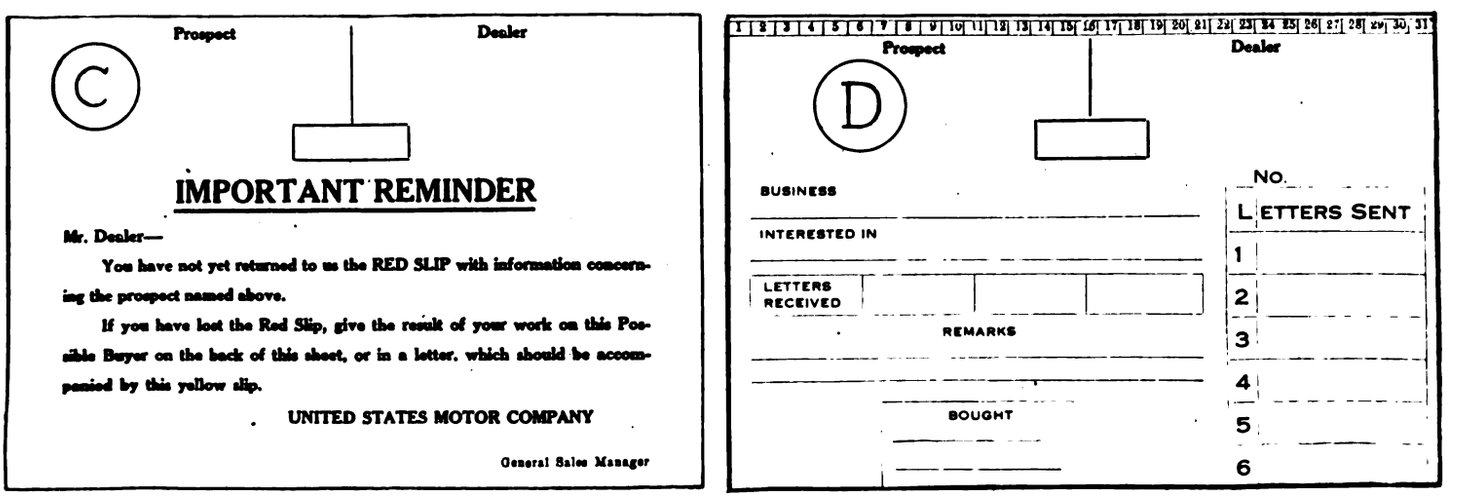
Far-Reaching System Employed by Big Corporation That Follows Prospective Purchasers to the End—Details Carefully Worked Out and Constitute Comprehensive Course in Salesmanship.

When a certain man whose name now is well known all over the United States, first entered the hardware business on a large scale with an immense central factory supplying branch houses in every large city and agents in every cluster of domiciles that was large enough to be styled a town, he learned, among other things, that everything does not always come to him who only waits, despite Disraeli's learned words to that effect. He found, as so many others have found since, that it was necessary for him to work while he waited, and he found that the best way he could work was to make his branch managers and his agents and dealers work. He found, too, that though many of his dealers were willing and anxious to work they did not know how to go about it intelligently.

So he "got after" his dealers and his agents—not in the nagging, pounding way that breeds discontent and antagonism, but in the quiet, helpful way that makes friends and, incidentally, makes sales. He extended a helping hand to those who were stranded on the shoals and led them over the difficult places by educating them and by the judicious use of gentle persuasion. And his greatest help was in the form of a helpful follow-up system. It was a follow-up system of the right sort. Letters which contained such gems of thought as "Why haven't you closed the contract with Smith?" found no place in it. Instead, the letters were short but cordial and answered questions rather than asked them. They were boosting letters that contained no "knocks." The hardwareman's modus operandi was to demonstrate how sales could be made and not to ask why they were not made. His business flourished and grew under the then unique plan until at present it is a veritable monument to his business acumen. He led his dealers and his agents; he did not drive them. He continually helped them to make sales; he furnished them with "leads" and sales propaganda; and he did not drop a prospect immediately he had turned over the prospect's name to a dealer for attention. He



NOTIFICATION (A) SENT TO THE DEALER AND BLANK (B) FOR HIS REPORT



YELLOW "MEMORY JOGGER" (C), AND THE CARD (D) FILED AT THE HOME OFFICE

(Continued on page 25.)

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CARD SYSTEM SUPPLIED TO DEALERS BY U. S. MOTOR CO.

It Is Employed in Connection With the Blank Forms Contained in the Accompanying Article, the Following Reproductions Constituting What May Be Termed Daily Lessons in Salesmanship.

HOW TO USE THIS CARD SYSTEM.

This card system is designed to serve the convenience of our dealers and their salesmen. When you obtain the name of a Possible Buyer—from the pink slips sent you by the General Sales Department at the Home Office, or through newspaper advertising, or in consequence of the recommendation of friends and customers—always make out a Daily Sales Record Card.

When an appointment is made for a later interview, enter the date of the "next appointment" in its proper place; then file the card under the date of the appointment. Do this always, and make it a rule to go over your daily file the first thing each morning. In this manner your interviews will be arranged methodically; you will be on hand at the appointed time, and the records noted on the card will have made you familiar with the details of the customer's case. This is very important.

When a sale is made, the date, the name and model of car, the motor number and registration number should be noted on the back of the card. The remainder of the card serves as a memorandum, as shown on the sample card which will be found in this box. By filing the card under the alphabetical index you retain a permanent and complete record of all the details accompanying the sale of the car, to which you can refer when occasion arises.

On the close of, say, the first day of the month, date card One should be moved behind card Thirty-one, and the procedure should be followed with each day's card, so that the business of any particular day will always be found in front of you.

More cards will be furnished, free of charge, upon application to the General Sales Department.

UNITED STATES MOTOR COMPANY
3 West 61st Street New York City

(1) HOW TO APPROACH A CUSTOMER

While there is no general rule which may be set up for the treatment of the possible buyer, one way which never fails is to see in him a seeker after information, and to be absolutely at his service in giving it with the utmost freedom and willingness. If the customer is a man of your own town and as yet unfamiliar with the various competing models which the market affords, it is generally a good plan not to go too far in making importunities for an immediate order; instead, offer him every chance for further information and for a demonstration. When this demonstration has been given, however, the prospect must be assumed to be able to say whether he will buy or not. But, whether you speak to the prospect or write to him, always say something about the car and its good qualities.

(2) BE CONFIDENT

Without confidence you cannot do business. If you believe what you say—and you should, or you should not say it—you will have no difficulty in making other people believe it. A plain true statement of the facts and the merits of the subject under consideration is all that is necessary. Keep positively in mind the fact that you must not decry, belittle or speak ill of your neighbors. You weaken your own case by referring to your competitors. Bestow your politeness and attention equally to all who come to your showroom and ask for information. The old-fashioned saying, that clothes make the man may be all right for the seller, but it does not hold good in the case of the customer. The jingle of the buyer's coin sounds just as musical in the pockets of a pair of corduroy trousers as it does in the most expensive broadcloth, and there is no difference in its value once it has been transferred into your own cash-box. So never judge a man by his clothes. You are apt to make a mistake.

(3) TEN REASONS WHY

The strongest of all sales arguments is the "Reason Why" argument. Therefore you should make it a point to have at the tip of your tongue at least ten good reasons why the car you sell is better than any other. Familiarity with the company's trade literature will furnish the necessary material. While the salesman occasionally says too much, it is impossible for him to know too much about his own car. "It's a fine car—nothing better. We have sold forty-nine so far this season, and have not had a single complaint!" This is a truthful, but negative statement, capable of considerable improvement in the light of good salesmanship. It would be much better to call attention to mechanical advantages and to the satisfaction the car has given to every user. It is the positive statement and the impression of the customer that the salesman knows what he is talking about that clinch the argument.

(4) LEAVE CARD AND MAIL CATALOG

When you visit a prospect, be sure to leave a card—sometimes it is the only thing by which the prospect remembers you or the name of the car. Many salesmen do not leave a catalog, explaining that they need it for another call. Instead they mail a catalog from the office, at the same time writing a letter in which they drive home the arguments which seemed to impress the customer most during the conversation.

Never fail to keep an appointment, or to see a prospect again after a few days, even if he should not be quite ready to give his order.

(5) TILLED GROUND THE BEST

Should you be inclined to hesitate about seeing a man just because you learn that a representative of some other make of car has already been to interview the prospect, then remember that tilled ground is the best. An intending buyer who has been approached usually has already convinced himself of the general utility of the automobile, so that all you have to do is to convince him that your car is the logical one for him to buy. The more the prospect knows about automobiles, the better it will be for you, besides which there is the greatest fascination for every good salesman: a contest with your rival and an opportunity to let the best man win.

(6) MAKE YOUR TALK TELL SOMETHING

Some of the older automobile salesmen will have made the discovery that it is no longer possible to dismiss the customer's inquiry with mere trivialities, such as: "This car has all others beaten to a frazzle." "Nothing like it was ever made," etc. Meaningless generalities of this sort often render the decision of the intending purchaser needlessly difficult and slow, and not infrequently impress the customer with a suspicion of inferiority of a really meritorious product.

(7) CONSIDER HUMAN INTEREST

A salesman in the country can often take his cue from the general surroundings of the prospect's house. If the house is architecturally fancy he may assume that the man wants speed and a fancy demonstration. On the other hand, if the house is simple and the surroundings in keeping, the man will want medium speed and a motor that can be throttled down. It is well to consider human interest; by doing so you will not only win a customer, but a friend for your car as well.

(8) STUDY UP

It is a good idea for the salesman to polish up his arguments once in awhile. If he travels in the same rut all the time, uses the same shopworn arguments in approaching the prospective buyer; if he does not overhaul his selling ammunition from time to time he will see his business falling off. Even clever arguments will become worn at the edges, and fresh magnetism, new enthusiasm, is needed to make the salesman continuously efficient.

(9) TO GET BUSINESS

To do a good business, you must have initiative, system, originality. You cannot sit down and wait for trade to come into your store. You must go after it. You must make personal calls, write personal letters, do everything your ingenuity can suggest, to stir up interest in your business. You must carefully attend to the wants of your customers. You must be accommodating and prompt; only in that way can you secure and hold the good will of your patrons.

(10) COURTESY AS AN ASSET

So absolutely do some people rely on the first impression of strangers, that it behooves us to try always to appear at our best. Be as natural and unaffected as possible. Study the needs and wants of your customers. Be prepared to render any little assistance to those in need of it, and, above all things, remember that you cannot catch flies with vinegar. If you cannot do anything else to help things along—just smile. Civility costs nothing and if your liver be in good working order, why should you not be courteous, civil and pleasant, and make the buyer think that you have not a care on earth? Cultivate your memory. Learn to call people by name. You have no idea what help it will be.

(11) IMPORTANCE OF THE FOLLOW-UP

Fewer things are of greater importance to the automobile dealer than a proper method of "following up" his prospective buyers. The card system is indispensable for this purpose.

When the name of an interested party comes to the office, either from the home office at New York, through your own newspaper advertising, through the recommendation of friends and customers, or in any other way, the date of the inquiry, name, occupation, business and residence address, telephone number, source of inquiry, and model in which the prospect is interested, are written on one of these cards. In that way forgetting never happens.

Keep visiting, writing, or sending literature, until the prospect places his order with you or you become satisfied that he will not, or cannot buy.

(12) KNOW YOUR CAR

The automobile salesman who wants to succeed with the present-day buyer should be well fortified with a thorough knowledge of his car and also be well posted on the important features of other cars, in order to be able to give satisfactory explanations. A close study of the trade literature issued by the Company will result in a more detailed knowledge of the various constructions.

(13) DANGER OF TECHNICALITIES

Avoid technicalities in your conversation with the customer, unless you know they are welcome, understood and appreciated.

If you think that a special letter from the home office might help matters, write to the general sales-manager for such aid, giving him the particular points to be covered.

(14) SPECIALIZE IN YOUR ARGUMENTS

Specialize in presenting your arguments. Show the physician that by the use of the car he can visit all his patients in one-third of the time, or three times the number of patients in the same time—and that thereby he increases his usefulness to the community as well as his income. Illustrate to the business man that the car will save him money; to the contractor that he can more successfully oversee his operations. In other words, talk to the prospective buyer about his own case and hand him such literature as will best explain what the motor car will do in serving his particular needs.

(15) YOU MUST ADVERTISE

One of the things often overlooked is the value of advertising. The business life of the present day is complex and the dealer who wants to sell a great number of cars must bring the fact that he is selling them and that his cars are the best the prospect can buy, to the attention of the greatest possible number of buyers. Judicious publicity is as great a help to the success of the individual dealer as are reasonable price and excellent value of the car he sells. It will never prove a good plan to expect good business first and then decide upon a campaign of advertising. A dealer who lets others know early in the season that he is alive and where his goods can be found by those who are likely to need them, gets the biggest business, can advertise still more, and do still more business. If you are not already familiar with the company's new advertising plan, write to the Advertising Department for a copy of it. It will be of much interest to you because the new plan makes you virtually your own advertising manager. Any dealer who can sell a car can write an advertisement that can sell a car—by just anticipating the questions and objections the average customer advances; by refuting the false sayings of his rivals; by setting forth in language such as he uses in his every-day talk, the points of superiority of the product of the United States Motor Company.

(16) USE THE MAILS

Have you ever considered the value of a forceful personal letter to your prospective customer? The mail will reach your man when it is impossible for you to gain an interview. You can increase your business manifold through letters and it costs practically nothing but a two-cent stamp. Plant your literature where it will do the most good; that is in the hands of the man who needs the automobile. If you are too busy to institute an effective mail circularization, let us help you. Through a letter you can speak to a hundred men in the time it would take you to see only one personally. Try it.

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ASSISTING THE DEALER TO MAKE SALES.

(Continued from page 23.)

followed him up with personal letters—not form letters that usually are thrown away or which breed contempt—and what is most important of all, he kept his dealer informed regarding the correspondence by forwarding to him a copy of every letter he addressed to the prospect.

It is just such a system as this that the United States Motor Co. of New York has installed. It is a cross between an educational campaign and a boost for sales, and the idea behind it all is helpful suggestion and not harmful harping. The system was evolved to help the dealers. Its purpose is to show them how to make sales, how to approach a prospect, just what to say and just what not to say in order to make the best impression and to make the sale. That it does help the dealers is revealed by the fact that as the result of an advertising campaign one car was sold for every eight inquiries originating in the State of New York that reached the home office of the United States Motor Co. in the month of August. The high average is attributed to the working of the follow-up system.

Of course, it costs a lot of money to install and operate such a system; but it is worth it. Every cent that is spent goes to help the dealers to make sales. It is a "show me" system of the first water, and the least that can be said of it is that it works. With such a big institution as the United States Motor Co. and with a line of cars embracing the Maxwell, the Stoddard-Dayton and the Columbia, requiring representation in practically every city and hamlet in the United States, it is inevitable that there should be among the dealers a number who are enthusiastic salesmen but who are lacking in tact, or intuition, or training—call it what you will—and it was to help these men that the system was installed. Even among the most successful salesmen with the best records, cases not infrequently crop up with which they are unable to cope. In these cases, a personal letter from the home office, signed by J. D. Maxwell himself, or by Alfred Reeves, the sales manager, often provides the necessary stimulus to the prospect that results in the sale. This is part of the system.

Not the least important feature of the whole system is that it is simple. Red tape, so-called, has been cut off so short that scarcely a vestige of the color remains. In the first place, every dealer, when he becomes the company's representative, is supplied gratis with a card index system, with its tabs marked according to the letters of the alphabet. One of the cards that is to be filed with the aid of these indexes is reproduced herewith, the obverse and reverse sides being marked F and G, respectively, for purposes of explanation.

Apparently, nothing that will prove of benefit to the dealer in the way of helpful suggestion has been overlooked. The available space on the yellow cards is used in a manner that cannot fail to help the dealer. On every card there is a particularly terse suggestion dealing with an individual phase of the salesman's art. For the most part, these suggestions are short and crisp and their value, which cannot be doubted, is due to the fact that they pro-

F

Form 407—5M—5 29-12

Dealer's Daily Sales Record — United States Motor Company's Products

Name_____ Business_____ Town_____

Business Address_____ Residence_____ Phone_____

Interested in_____ How was name obtained?_____

Assigned to salesman_____ Date_____

Does Prospect Own a Car? What Make? _____

Is he likely to buy later? State when? _____

1st Interview_____ Next Appointment_____

2d Interview_____ Next Appointment_____

3d Interview_____ Next Appointment_____

Demonstration. Date_____ Result: _____

(Over)

G

Sales Record

Date of Sale_____ Make of Car_____ Model _____

License or Registration Number_____ Motor Number_____

DATE	CAR AND EQUIPMENT	PRICE	

OBVERSE (F) AND REVERSE (G) SIDES OF CARD FURNISHED THE DEALER FOR HIS SYSTEM

Form 479 **Do Not Soil—Write Plainly, Using Ink**

STODDARD-DAYTON Model No.
(See name plate on car)

E

Purchased from

Owner's Name

Street & No. City State

Notice: By reporting promptly the model and number of his car the owner will receive a price list of repair parts which will enable him to order parts by number, thereby insuring **Quick Service.**

RETURN CARD, USEFUL IN CHECKING FOLLOW-UP SYSTEM

complete and neatly boxed. That promotes a tendency toward order and system and encourages the dealer to keep abreast of his business and to keep it at his finger tips, so to speak. In the box there are two kinds of cards; one is yellow with the tabs marked from 1 to 31, corresponding to the days of the month; the other is blue, pound the doctrine of true salesmanship. That they do it in a manner that is enthusing instead of depressing may be judged by the suggestions themselves, which are reproduced herewith. There are few dealers who cannot read each of them with profit.

The whole system is perhaps best made

(Continued on page 27.)

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Dear Sir:

We received from you recently an inquiry for catalog and information with reference to Stoddard Dayton automobiles.

In order to avoid annoyance to you, in case you have already decided upon your purchase — or to insure that you receive further information on Stoddard Dayton cars, should you desire it—we are taking the liberty of requesting you to fill in the attached postal. By giving us this information you will confer a favor for which we thank you in advance.

Hoping that we have not presumed too much on your good nature in this request, we remain

Yours very truly,

DAYTON MOTOR CAR COMPANY

Form 331C—10M—9-27-11

DAYTON MOTOR CAR COMPANY
BROADWAY AT 61ST STREET, NEW YORK CITY.

Gentlemen:

Complying with your inquiry I (have not) have bought an automobile.

The make is.....

I do (not) expect to buy an automobile in the future.

As I recall now I saw your advertisement in.....

Very truly yours,

Name .....

Town.....

State.....

REPLY POST-CARD SENT OUT BETWEEN FIRST AND SECOND FOLLOW-UP LETTERS

ASSISTING THE DEALER TO MAKE SALES.

(Continued from page 24.)

(17) HAVE IT WRITTEN DOWN

Look out for the employee who carries your business in his head. If he goes away he takes that head with him and his successor is at sea, and so are you. If he dies, ditto. Every clerk, department manager, or other employee of your establishment should be required to set things down in black and white. All data pertaining to customers, territory, stock and equipment should be on record, properly classified and filed. Such system makes it possible for you to dispense with the services of the best employee at any time, without throwing your whole business out of joint. Do not allow any one head to monopolize all the information about your business. Have it written down.

(18) KEEP COMPLETE RECORDS

If this card system is properly maintained, every letter or call will be a progressive step. It does not take over two minutes to write up a record.

When a sale is made, the license and car number should be written on a card, which makes it a complete and useful record. It also helps to avoid misunderstandings in the many details that usually accompany an automobile sale. If the prospect finally says: "Not until next Spring," the card is filed away and the salesman is certain that the customer will not be forgotten.

(19) HOW TO DEMONSTRATE

The most essential qualification in the make-up of an automobile demonstrator is the aptness with which he seizes his opportunities. He makes his appointments with tact and carefully avoids the exhibition of undue anxiety. If possible, he chooses agreeable weather for his demonstration, and in case of rain or cold provides wraps and coverings before starting on the trip. Then no excuses are necessary. The car should be kept scrupulously clean, and car and demonstrator should show an atmosphere of comfort that impresses the customer favorably. Make it a rule to let the prospect take the wheel of the car, so he may convince himself of the ease with which it is managed.

(20) DON'T RACE

The ideal demonstrator does not speed his car unless he is requested to do so, and when the road is clear; and then he handles the vehicle with an unfailing precision that will indicate to the prospective buyer that the handling of an automobile is really a comparatively simple thing. Do not bewilder the novice with too many explanations at one time, for anything likely to confuse him is worse than no explanation at all. Special talking points should be enlarged upon and made to show their value in an actual demonstration. Altogether it is safe to say that the demonstrator makes or unmakes the sale, since the customer to whom the car is demonstrated has very nearly reached the purchasing point.

(21) SALESROOM, REPAIR SHOP AND STOCK ROOM

The salesroom should be kept as clean and attractive as possible. If possible, have a car of each model on exhibition and see that they are fully equipped. Women are an important factor in selling cars; they like the fixings, and their tastes are catered to.

The repair shop is a difficult problem. The customers must be satisfied and the shop must not show a loss. The proper solution is this: put a diplomat in charge; hire good mechanics and teach them to do the work thoroughly and economically. Avoid professional automobile repair men who are always improving on factory construction, and, above all, never under any circumstances allow repairs to go out until they have been paid for. If you cannot collect when the work is finished, forget the charge. Do not lumber up your books with charges that may be disputed later. Settle it up at the time and you and your customers will be better friends and there will be no uncollectable accounts to worry about.

In the stockroom, have everything in its place and a place for everything. Record everything coming in and going out, and keep this system up.

(22) FREE INSPECTION

The Company's Free Inspection and Satisfied Owners' Policy* is primarily intended to be of help to the dealer. Such service does not consist in giving away repair parts, but it should be exercised in an examination of the owner's car and in the making of the small and inexpensive adjustments that occasionally become necessary on carburetters, magnetos, etc. You will make friends for yourself and your business if you do not wait until the owner comes to your garage with a request for an examination, but if you offer to look over the car and ask whether anything might be wrong. Your interest in the welfare of your customers will be amply repaid; they will speak of it to friends, who, when they are themselves ready to buy, will flock to you rather than to your competitors.

* If you are not already familiar with it, write for a copy.

(23) KEEP A STOCK

It is a wise dealer who keeps a stock of cars on hand for immediate delivery. Many a sale has come to naught simply because the dealer did not have a car to deliver at the time the customer wanted it. Procrastination is the thief of time as well as of automobile sales, and the dealer who greets his customer with: "Here's your car," surely gets away with a bigger sales record than his neighbor who is merely willing "to book" his customers' orders for more or less prompt delivery.

(24) THE FATE OF THE PRICE-CUTTER

Please bear in mind that the automobile business is not different from any other line when the dealer attempts to sell at cut-throat prices. When your competitor chooses to give his profit away, let him do it, for his price-cutting is absolute proof that he is up against it good and hard. Slashing prices helps no automobile dealer; it is merely the forerunner of a debt and mortgage. Do not be bluffed into selling your goods at what Mr. So-and-So sells his. Price-cutting is possible only to the man who does not know the worth of his own goods. Sooner or later—generally sooner—after he has tried in vain to reconcile his bank account to his liabilities—the price-cutter makes his inglorious exit from the business.

(25) SPECIAL EQUIPMENT CAUSES DELAY

Here is another tip. Many delays could be obviated if all dealers would avoid asking the factories for special equipment. Of course there are circumstances where the customer insists upon such equipment and where he should have it. But in the general run of business every request for equipment that differs from the standard specifications interferes with factory routine and causes delays which in the end reflect in the filling of ALL orders.

The equipment with which the cars of the United States Motor Company are furnished has been decided upon as the best indicated by exhaustive investigations and tests.

(26) LIST OF OWNERS

Keep a complete list of the owners of the cars you sell in your territory, and wherever possible refer to it in making sales. Your statement that Mr. Jones and Mr. Smith bought the same car carries a lot of weight with the prospective buyer. He logically argues that a car is certain to do for him what it has done for other owners. Besides, as time goes on, your owners will provide a good market for the sale of newer models, for a man who has operated one make of car is very apt to buy a later model of the same make with which he has been well satisfied.

(27) MARKING YOUR LITERATURE

Never send a catalog without turning down the leaves or otherwise marking the page showing the model desired, and with a blue pencil underscore certain features that will carry weight with the prospect. Also mark in other places of the catalog any matter or special arguments that may come up. Write on the envelope or wrapper: "Marked Copy." Put your card into the catalog, since individuality is the most valuable factor for the salesman and for the firm he is serving.

(28) CAUTION IN TRADING SECOND-HANDS

When you sell a car, at the same time taking in trade an old one, you are confronted with the problem of selling two cars. There are conditions under which a trading-in of old cars, to facilitate the sale of new ones, becomes expedient. On the whole, however, it is well to bear in mind that the task of a salesman is not merely to sell cars, but to sell them at a profit. Unless you establish a limit you may find yourself overstocked with second-hand cars and your capital tied up in old material at a time when it would be more profitably invested in new goods. Not unfrequently it is the better part of wisdom to say "No," and to forego a sales opportunity rather than make a sale of doubtful profit. Here is where it is advisable to go slow and to use good judgment.

(29) THE COMPANY BEHIND THE PRODUCT

One of the most forceful ways in which the purchaser may be brought to an appreciation of the cars you sell is in calling his attention to the commanding position which the company occupies in the industry. The financial integrity and commercial responsibility of the United States Motor Company make it certain that all its products are made with highest regard to giving full value, and that the prospect is dealing with a concern whose reputation is world-wide and whose product is in the hands of many thousands of satisfied users.

(30) THE SPECTRE OF REPAIR BILLS

All cars made by the United States Motor Company are the result of the highest class of engineering skill to be found in the industry. All parts used in building these cars are of the material best suited for the particular properties it is desired to secure, and beyond a reasonable and natural wear of bearing surfaces and tires no repairs will become necessary that can be attributed to material or workmanship.

This is an important thing to keep before your customers, many of whom still labor under the notion that the owning of an automobile is a matter of great expense and considerable trouble. You know it is not.

(31) AUTOMOBILE VS. HORSE

The operation of an automobile is no more beset with difficulties than the acquirement of expert horse knowledge, comprising at least a tolerable smattering of horse-shoeing, harness-making, wagon-building, and of veterinary accomplishments.

In computing the usefulness of the automobile and of the horse separately, a different reckoning will have to be adopted for each. It is evident that the cost of the horse is based on the time it is kept—irrespective of the amount of service rendered, while the automobile costs a given sum for a given amount of work done, causing no expense whatever during periods of non-use.

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ASSISTING THE DEALER TO MAKE SALES.

(Continued from page 25.)

plain by watching its workings. Let it be assumed, for instance, that John Doe, of Texarkana, Tex., reads a Maxwell advertisement in one of the trade papers, or in a daily newspaper, or on a fence, and thereby is prompted to write to the home office for a catalog. When his inquiry is received, it is assigned to the Texarkana dealer, and John Doe's name and address and the date are noted on three slips, illustrated herewith as A, B and C, and a card, designated D. All four are made out simultaneously with the aid of carbon paper, by a corps of young women, each one of whom looks after a certain section of the country.

Slips A and B, the former being pink and the latter bright red, then are forwarded to the dealer, together with the original inquiry, a copy of which is kept on file in the home office. The reason for sending the original inquiry to the dealer is to furnish him with a card of introduction to the prospect. In the mean time, as is made plain on slip A, the home office has forwarded to the prospect the particular catalog or information that he requested. On the pink slip A the dealer is instructed to see the prospect and to make report to the home office on slip B within a period of 15 days if the dealer's territory lies in the East or Middle West, or 30 days if the territory is on the Pacific Coast.

When the dealer reecives slips A and B from the home office, his first duty is to copy the particulars as given on to the obverse side (F) of the card which accompanies the filing system supplied the dealer. The card is self-explanatory. It is filed in the card system under the date of the month for which an appointment has been made. Then each day the sales manager, or whoever has the business in charge, places the day's cards, after the various appointments have been assigned to salesmen, at the back of the pack, behind the card lettered 31. In this way the day's business always is before the dealer, who can tell at a glance just who he has to see and at what hour he must call. If, after several calls have been made on the prospect a sale results, that fact is noted on the reverse side of the card (G), which then becomes a permanent record of the sale and is filed alphabetically in the blue index.

The card D, which, as has been explained, is made out simultaneously with A, B and C, is filed at the home office. The figures at the top (1 to 31) serve to designate when the dealer's report on the red slip B is due. If John Doe proves merely a catalog hunter and has no real intention of purchasing a car, the dealer has little difficulty in ascertaining that fact, which he notes on the red slip B and transmits to the home office file as a "dead one" and the expense of again circularizing the prospect is saved.

If the dealer has been so busy, or so neglectful, that he has failed to send in his report on slip B within the 15 or 30 days requested by the company he then receives slip C, which is printed on bright yellow paper to make it conspicuous. If that fails to bring in the red slip B, a personal letter signed by Sales Manager Reeves is despatched calling attention to the delinquency and requesting a prompt reply. The latter expedient seldom fails to bring a response.

The necessity for the company receiving a report telling whether the prospect is a good one or a "dead" one will be appreciated when it is pointed out that each prospect is systematically followed up from the home office, provided the likelihood of his purchasing a car appears good. To send literature continually to a prospect who really is a "dead one" represents an unnecessary expense which it is the purpose of the red slip to obviate.

If, in the estimation of the dealer, John Doe is a good prospect with bona fide intentions of becoming the owner of a car in the near or the far-distant future, he reports to the home office accordingly and the machinery of the follow-up system is set in motion to help the dealer make the sale. Immediately, the home office receives notification that the prospect really is a prospect, the card D is filed by State and County and Dealer. When the first of the follow-up letters is sent out by the home office to the prospect the date of the letter is entered on the card in the place reserved for it. Other places are reserved for the date and filing index number of letters that are received in reply, and a copy of every reply invariably is forwarded to the dealer in order that he may be constantly apprised of the situation which obtains.

Before the second of the series of six follow-up letters is sent to the prospect, however, a reply postcard, reproduced herewith, is sent him. Then, if he has purchased a car in the mean time, or if he has decided not to buy a car, the follow-up letters are stopped, as is the expense of sending them out. If he has not purchased a car and still intends to do so, the second of the series of letters is sent to him after a suitable period of time has elapsed.

In the meantime, if the prospect appears diffident, or the dealer has difficulty in closing the deal, or the prospect wants specific information on a particular point, a personal letter signed by either J. D. Maxwell or Alfred Reeves will be sent from the home office at the dealer's request. This feature alone constitutes one of the most valuable of the whole system, for the personal appeal direct to the prospect from the head of the big company almost invariably so alters the situation as to make it comparatively easy for the dealer to book the order.

Another excellent feature of the system, and one which was incorporated solely to help the dealer, lies in the maintenance of what may be styled a "publicity censorship board." Suppose, for instance, that the dealer desires to place some advertising in a local paper but is an indifferent "copy" writer. He may either have his "copy" written for him at the home office, without obligation or expense for cuts or electrotypes, or he may get out the "copy" himself and forward it to the home office to be edited. If, in the estimation of the advertising experts retained by the home office, the "copy" is good, the dealer is apprised accordingly. But if, as so often happens, the "copy" is calculated to repel rather than to attract, the dealer has pointed out to him the error of his ways, and helpful suggestions, based on the company's almost unlimited experience, are offered and in the end the local paper in which the advertising appears is enhanced in appearance by well-placed cuts and intelligent text matter of such character as to attract the attention of possible purchasers. All this service is free to the dealer and is maintained to help build up his business.

Another angle of the system which assists in cutting down the expense of the follow-up system and at the same time engenders a friendly feeling in the purchaser of a car lies in a little card which is sent out with every car. The card (E) is reproduced herewith and is self-explanatory. It is enclosed in an envelope, addressed, and merely requires to be filled out and mailed to the factory, which thus obtains a full record of car owners. By reason of the fact that its despatch ensures the receipt by the owner of "something for nothing," it invariably is returned and in this way a check is placed on the sending of literature and letters to those who already have purchased. Incidentally, the sale of cars by dealers is checked and the returned cards form a permanent record, filed in the home office, of the whereabouts of every car that is sold. By sending out the instruction and parts book in response to the request on the card, the company at least partly ensures that its products will be properly cared for, and this, in turn, reflects back to the credit of the dealer, for satisfied purchasers are the best advertisement, and one word of mouth from a satisfied owner is worth pages and pages of perfectly good advertising copy. And it is a great deal less costly to the company and to the dealer.

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SIMPLE ELECTRIC VALVE IN NEW EDISON DEVICE

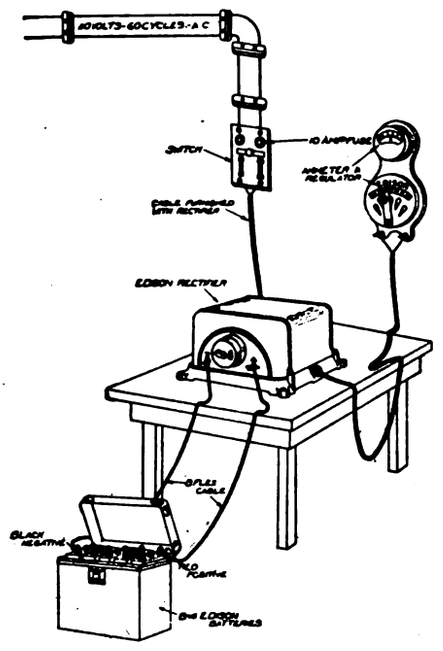
It Is an Alternating Current Rectifier of Surprising Simplicity—Intended for Battery Charging Purposes.

Although charging storage batteries from a source of direct current is a comparatively simple operation, requiring not more than a couple of electric light bulbs and a few feet of wire, the same operation where the source of current is alternating is more difficult and entails the use of special apparatus which may or may not be complicated, according to the theory upon which it is constructed and on which it operates. In seeking to eliminate the objections to the mercury arc type rectifier, apparent in the fragile bulb, and to the rotary rectifier with its many moving parts and the necessity for almost constant attention, Thomas A. Edison, Inc., of Orange, N. J., just has brought out a new type of alternating current rectifier which is simplicity itself in both construction and operation. Like all other Edison devices, the new rectifier has not been offered on the market until its right to the prestige of Edison's name had been proven beyond cavil; it has been under experiment for a period of several years, and at last has been brought to the state of perfection where some 4,000 hours' continuous operation at full load has failed to make necessary adjustments of any kind.

In its simplest aspect, the new rectifier is merely a mechanical valve which permits current waves of only one polarity to pass through it to the battery. It is of the electro-mechanical or vibrator type, and in contradistinction to the familiar mercury arc rectifier, commences operation immediately the current is turned on and without preliminary attention of any kind. As a matter of fact, the device should never require attention once it has been started, for it is perfectly automatic in action and its moving parts are so few and so well protected that it is almost a physical impossibility for its mechanism to become deranged.

The complete apparatus consists of the rectifier, which is supplied in several sizes to operate on 110-125 volts alternating current, either 25, 40 or 60 cycles, a double pole switch, a rheostat and an ammeter; sufficient wiring to connect the various components is supplied, and the operation is rendered simple by means of a wiring diagram. The direct current voltage which the device supplies may be varied from 2 to 10 volts, to suit requirements. Similarly, the amperage may be adjusted, the B2 type machine being constructed to deliver from 3 to 8 amperes, and the B4 type machine delivering from 6 to 16 amperes.

In connecting the rectifier for battery charging it is merely necessary to attach two wires from the source of electric light current to the cable furnished with the device. From two binding posts, plainly marked positive and negative, two wires are led to the battery. Where all the batteries to be charged are of the same type and capacity, adjustment of the direct current is not necessary, of course, in which case the rectifier can be set at the factory for the desired voltage and amperage and



EDISON'S NEW A. C. RECTIFIER

will require no further attention. Where several types and sizes of batteries are to be charged, the equipment must of necessity include a rheostat. Although the new device is at present supplied only in sizes suitable for charging comparatively small batteries, a complete line in sizes up to 100 amperes capacity is under construction and shortly will be placed on the market. The larger sizes, of course, will be suitable for charging the batteries of electric vehicles.

Annealing to Facilitate Tube Bending.

A piece of copper or brass tubing that is to be bent may be annealed, if it is not already as soft as it should be for this purpose, by passing it slowly through a blowtorch or other flame and heating it to a dull red a little at a time until every part that is to be bent has been so heated and then allowed to cool. The flame of a common gas stove is excellent for annealing small tubing in this way. The fact that a piece of tubing has been annealed, however, does not preclude the necessity of filling it with sand or lead to prevent kinking.

ST. LOUIS SHOW STAGED IN TRANSPLANTED FOREST

Fifty-three Dealers Show Latest Products Amid Rustic Surroundings—Electric and Commercial Vehicles Much in Evidence.

In a forest two acres in extent, which is described as dense and which sprang up on the outskirts of the city at the inspiration of a master decorator, 53 automobile dealers, members of the St. Louis Automobile Manufacturers' and Dealers' Association, opened on Monday last, 7th inst., an early fall show comprising the products of 73 motor vehicle factories, in Highland Forest Park. Weather permitting—for the better part of the show, which is the sixth annual exhibit of the association, is out of doors—the show will be open each afternoon and evening until Saturday next, 12th inst.

The decorations are effective but artistic. Clumps of growing trees entwined with shrubbery have been transplanted from nearby forests, and to the myriad colored autumn leaves and berries which go a great way toward making the surroundings eye-pleasing during the daylight hours, have been added thousands of vari-colored electric lights, which cast their glow for the benefit of the evening visitors. In perfect harmony with the surroundings, the partitions which separate the various exhibits all are of rustic formation, and rustic benches and rustic signs which designate the exhibits are profuse.

Music in plenty is supplied by two brass bands housed in bandstands of rustic formation at opposite corners of the park.

The cars on exhibition are: Borland electric, Stutz, Reo, Matheson, Stanley, Oldsmobile, Flanders, Flanders electric, Hupp-Yeats electric, Case, Ohio electric, Premier, Paige, Fiat, Haynes, Marmon, Alco, Abbott, Detroit electric, Oakland, Jackson, Michigan, Rambler, Locomobile, Mitchell, R. C. H., Buick, Firestone-Columbus, Studebaker, Henderson, Warren, Standard electric, Stearns, Speedwell, Overland, Cadillac, Nyeberg, National, Little, Glide, Peerless, Detroiter, Rayfield, Dorris, Bergdoll, Moon, Hudson, Ford, Regal, Pierce-Arrow, Moline, Empire, Maxwell, Stoddard-Dayton, Columbia, Rauch & Long electric, Packard, White, Chalmers, Baker electric, Woods electric, Waverly electric, and Velie.

The commercial vehicles shown are: Wilcox, Poss, Universal, Alco, Locomobile, Buick, Speedwell, Peerless, Dorris, Moon, Ford, Pierce-Arrow, General Vehicle, Packard, White, Brooks-Latta, Gramm, Modern, Federal, Mack, and Commerce.

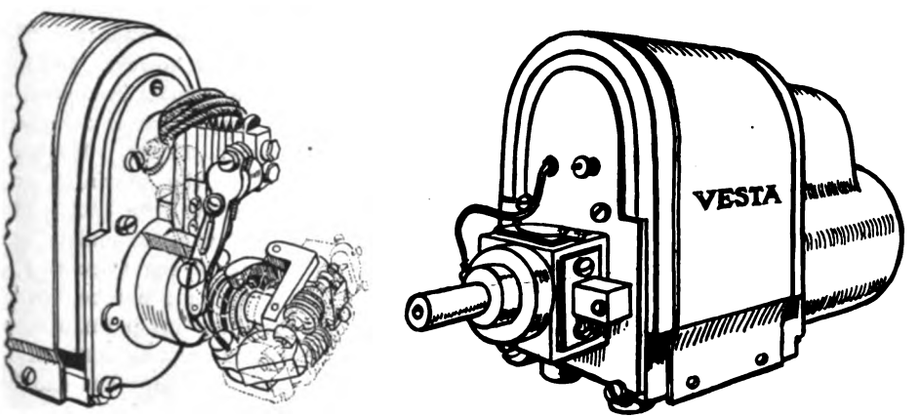
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GENERATING THE CURRENT THAT LIGHTS THE CAR

How the Magneto Developed Into an Illuminating Dynamo—Systems That Employ Permanent Field Magnets Compound Wound, Single Wound and Unwound—Caring for Commutators and Brushes.

(This is the third of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render earier their care and repair by dealer and owner alike.)

The simplest of all the current generating machines that may be used for electric lighting purposes, as has been outlined in the two previous articles which have appeared in the Motor World, is the permanent magnet generator, or, as it is more familiarly known, the magneto. It is around an instrument of this type that several of the successful electric lighting systems are built. Despite its inherent simplicity, however, which assuredly is one of its greatest advantages, for there is practically nothing



VESTA GENERATOR SHOWING MECHANICAL VOLTAGE REGULATOR

to get out of order or require attention, the permanent magnet machine is lacking in one of the most important properties of the dynamo type of machine in which the fields are composed of electro-magnets.

Why Current Regulation Is Necessary.

In the permanent magnet machine the magnetic field remains constant, regardless of changes in the speed of the armature; it is the same whether the machine is running or idle. From which it follows that if the speed of the armature could be maintained constant the output of the generator also would remain constant. But as every one knows, it is impossible to drive an automobile at constant speed, no matter what that speed may be. Consequently, the speed of the magneto armature varies in accordance with the speed of the vehicle, and unless some provision is made for governing the armature speed the output of the generator will vary over such wide limits as to be practically worthless for lamp lighting or battery charging purposes.

As a matter of fact, it is extremely difficult to so design any type of generator that the output will not vary within the narrow limits necessary to maintain practically constant brilliancy in the lamp filaments. This is one of the reasons a storage battery is an essential part of a lighting system. It may be likened to the rubber gas bag that generally is used between acetylene headlights and an acetylene generator. Like the rubber bag, the storage battery absorbs fluctuations of increased output caused by increased armature speed, and when the armature speed drops to the point where the lamps normally would dim, the storage battery gives up a small part of its energy just as the rubber gas bag collapses slightly when the pressure from the acetylene generator drops, thereby maintaining the pressure in the piping between the bag and the lamps constant within certain limits.

Battery "Floated on the Line."

To carry the same analogy a little further, if the acetylene generator failed through any cause to make gas, the headlamps would be supplied for a very short time by the stored up gas in the rubber bag. But it soon would become exhausted and the lamps would go out. With the storage battery and generator, however, though very nearly exactly the same phenomena may be observed, the energy stored in the battery is sufficient to maintain the lamps lighted for a considerable period, as for instance while a car is standing with the engine idle. Eventually it would become exhausted, of course, when it would be necessary to recharge it with the aid of the generator. Another reason why a storage battery is necessary in lighting systems is that many of the dynamos that furnish the initial current require a storage battery "floated on the line" before their self-regulating properties become apparent.

The Perfection battery charger, manufactured by the Economy Mfg. Co., of Economy, Pa., is an instrument of this type. It is a permanent magnet generator, or magneto, which is operated at constant speed and which relies for its self-regulating property upon the inherent characteristics of the storage battery to increase its resistance and thus to take less current from the generator as the battery approaches the fully charged condition. This is a characteristic which applies to all storage batteries and is quite easily explained.

"Storage Battery" Really a Misnomer.

During the charging or discharging operation, certain chemical changes take place in a battery. The battery does not really "store" the current; instead, it really makes the current. When it is fully discharged, the elements are exhausted (or may be said to be exhausted). When the battery is being charged, the elements are being revitalized, so to speak; they are being put into the condition that will cause them to produce an electric current. In other words, electricity, of this kind, is the result of chemical action. When the elements are exhausted there can be no chemical action and consequently there can be no electricity. When the battery is charged, fully or only partly, the plates undergo certain chamical changes which are the reverse of those that obtain when the battery is discharging. The reason for the increase in the resistance of the battery is that during the process of charging the plates absorb a certain percentage of the acid and as the water which contains the acid is a poor conductor of electricity—its conductivity is proportionate to the amount of acid it contains—the resistance of the battery rises.

Regulation by Battery Resistance.

In the Perfection battery charger advantage is taken of this characteristic to ensure that at high armature speeds the battery will not receive its charge at too high

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a rate. Otherwise, there is no method of voltage or current regulation, the capacity of the generator being 7½ amperes at 1,200 revolutions of the armature a minute. As the generator is designed to operate at twice engine speed it may be expected to carry the full light load of approximately 8 amperes at about 15 miles an hour on high gear.

Simplicity That Precludes Trouble.

The most striking feature of this particular instrument, of course, is its extreme simplicity. Provided it is lubricated, and even that operation is reduced to the point where it requires the minimum of exertion and attention, for the shafts run in ball bearings, there is absolutely nothing to get out of order. The likelihood of trouble has been obviated even in the case where it becomes necessary to take the instrument to pieces, for there are no insulated screws or bushings in its make-up, the insulated parts being carried on a ring which is separate and easily removable without the necessity for disturbing the other parts. Another unusual feature is that the magnets are mounted on a composition of ebony and asbestos wood which protests them from short circuits and demagnetization. The cut-out is magnetically operated and is arranged on the dash.

In view of the simplicity of the whole instrument it is probable that the only trouble which might manifest itself would be in the brushes which should be examined from time to time to ensure that they are pressing against the commutator properly. Sparking at the brushes, which is the bane of the electrical engineer's life, for it causes excessive wear and is in itself a sure indication of loss of efficienscy, may be eliminated quite easily by simply shifting the brush holder until the output reaches the required standard and sparking no longer occurs.

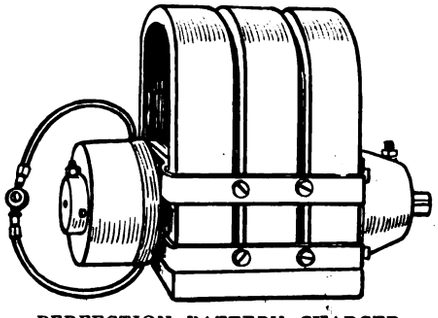
Color Scheme Facilitates Connecting Up.

The wiring of any electric lighting system quite naturally may prove a prolific source of trouble unless care is taken to see that (1) the proper size wire is used, and (2) the proper wires are attached to the proper binding posts. In this respect, it is becoming a fairly common practice for manufacturers to supply their systems equipped with wires insulated in different colors. Thus it becomes a simple matter for the amateur to connect the red wire, according to the diagram which accompanies the machine, to the red binding post, and so on with the other wires. Generally, a red wire is used for the positive side of the circuit, or the side which connects the positive terminal of the generator to the positive terminal of the battery. A black or a green covered wire generally is used for the negative circuit.

Two Methods of Governing Output.

When it is desired to maintain the output of a magneto generator practically constant, regardless of changes in car speed, there are two methods available. The first is to utilize some sort of slipping clutch or drive that will not permit the magneto armature speed to become greater than a predetermined limit. Generally such devices rely upon centrifugal force for operation, and though there are a number of machines of this type in successful operation, the system does not appeal, for it presupposes wear in the clutching device and loss of efficiency results.

The second method of maintaining the output constant is to arrange for the insertion of resistance in the line automatically, the resistance to be increased as the speed of the armature increases and the



PERFECTION BATTERY CHARGER

output therefore remaining practically constant. The Vesta magneto generator, manufactured by the Vesta Accumulator Co. of Chicago, Ill., is a machine of the latter type and probably is the only one of its kind which at present is in general use. The modus operandi of the generator is beautifully simple, as an examination of the accompanying sketch of the regulating mechanism will show.

Resistance Automatically Cut In.

Immediately the engine is started the magneto armature commences to rotate and when it has reached a speed of 400 revolutions a minute the centrifugal fly-ball governor connects the generator with the battery. As the speed of the armature increases the governor moves an arm across a series of contacts and in this way automatically inserts resistance in the line and thus maintains the output constant. Of course, if the engine stops, the spring-returned balls in the governor will cause the circuit between the generator and the battery to be broken and thus will prevent the battery discharging through the generator.

Although the current regulating apparatus appears complicated, it is not as complicated as it looks and really is quite simple in operation and seldom, if ever, requires attention, other than a few drops of oil about once a week. Only the moving parts should be oiled, though, needless to add, oil never should be put on the commutator or other electrical contact.

Commutators Require Occasional Care.

In case of failure of the generator to operate, the brushes, which generally are the most prolific source of trouble in any generator, should be examined to see that they make proper contact and have not worn down too far. It occasionally happens that the brushes of a generator will become so worn as to let the brush holders come in contact with the frame and thus prevent the brushes from making proper contact. If the current output of the machine shows signs of falling off, the commutator should be examined and if it exhibits a scratched or pitted appearance, and is not bright, very fine sandpaper, about No. 00, should be held against it while the machine is running. The sandpaper should be applied very lightly, however, and should not be permitted to remain in contact with the commutator longer than is necessary to remove the foreign matter. Medium oil should be used in the bearings, preferably, as there then will be less tendency for it to work out and accumulate on the commutator. One of the important considerations which should not be lost sight of is that in installing any permanent magnet machine it should not be fastened down upon an iron or steel base but should be supported on brass or aluminum.

Wrong Connections and Their Results.

Too much stress scarcely can be laid upon the necessity for making doubly certain that in connecting any generator the positive side of the battery is connected to the positive and not to the negative side of the machine. If the positive wire from the machine is connected to the negative side of the battery the result will be that instead of charging the battery, the machine will discharge it, and if the condition is not remedied within a very short space of time the battery probably will be ruined. With the Vesta generator it is a simple matter to determine which side is positive and which side is negative; by reason of the factory connections, if the machine is run clock-wise the right side will be the positive side; if it is run anti-clock-wise, the left side will be the positive. From which it appears that the instrument may be operated in either direction without altering wiring connections and with equal efficiency, which fact is true of any permanent magnet machine. Though dynamos may be operated in either direction, they will not generate in the opposite direction

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to which they are supposed to run unless either the field or armature connections are reversed.

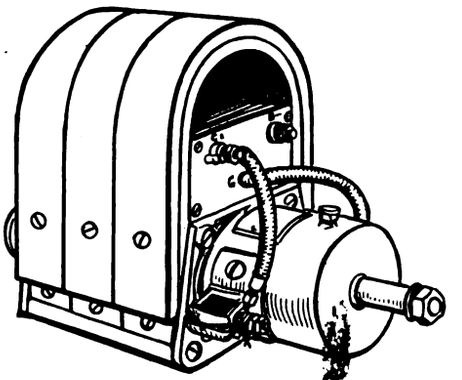
Meter Indications of Reversed Wires.

If with the Vesta system the wires leading to the battery are reversed, with the positive generator wire leading to the negative battery terminal, and provided all other connections are correct, the ammeter will indicatea "charge" when the engine is running as well as when the lamps are lighted, thus serving as indication of improper wiring. Whenever the generator cuts in the ammeter needle generally will move rapidly over to 10 instead of building up slowly, as it would if the connections were properly made. In a case like this, though the ammeter reads "charge," the battery actually is being discharged. Similarly, when the wires leading to the ammeter are reversed, with the other connections properly made, the meter will indicate, presumably, the rate of charge when it really should be indicating "discharge." When the engine is running the meter will indicate "discharge" instead of "charge." as it should if the connections are correct. When the wires leading to the generator are reversed, the meter will at all times indicatea "discharge," which is the true state of affairs, regardless of whether the engine is running or not or whether the lamps are burning or not. There really is little excuse for the wiring to be connected improperly, however, for the Vesta company supplies a comprehensive wiring diagram in colors to correspond to the colors of the wires supplied with the system.

Field Windings on Permanent Magnets.

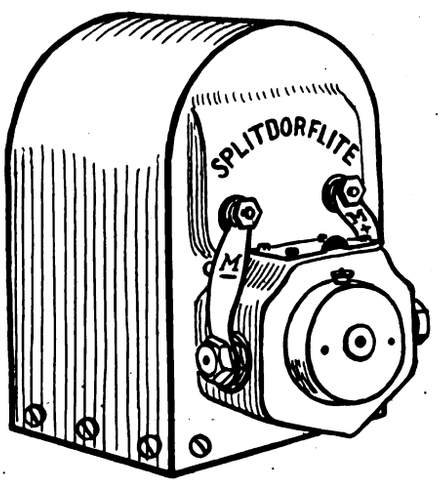
In the Berden system of electric lighting, manufactured by the Esserline Co. of Lafayette, Ind., the idea behind the permanent magnet machine has been carried a little further by the addition of a supplementary compound wound electro-magnetic field, the purpose of which is to make the instrument self-regulating without the necessity for slipping clutches or other mechanical means. The permanent magnet field serves to induce the initial current and, incidentally, positively assures that the output will "build up" properly after the machine has been taken down and put together again. Another important end it serves is that it absolutely prevents the polarity of the generator changing as it would in an ordinary dynamo if the wires from the battery were connected wrongly. If the polarity were changed inadvertently it would cause the meter needles to swring in the wrong direction, though little other harm would result, for the polarity of the generator would immediately change again when the battery was properly connected.

In the Berdon system, the windings in the electro-magnetic field are so arranged that the output of the generator automatically increases with an increase in load. The increase is within certain well-defined limits, of course, the arrangement being that when the lamps all are lighted and a full lamp load is on the generator, there still remains sufficient current from the generator to charge the battery, provided that is necessary. If, for instance, the



BERDON MAGNETO-GENERATOR

battery were completely discharged and the car were driven at night, requiring that all the lamps be lighted, the generator output then would be proportioned automatically to the full load. If, however, the battery were fully charged and the lamps all lighted, then the generator would light the



SPLITDORF LIGHTING GENERATOR

lamps but would pass no current to the battery. Similarly, if the battery were exhausted and the lamps not lighted, the generator output would pass to the battery.

Care of Commutator and Brushes.

As is the case with the two simple systems that have been described previously, there is little in the Berdon system to get "out of kilter." The armature is the only moving part and, as it is mounted in ball bearings, lubrication even is reduced to an operation which requires to be attended to at infrequent intervals. The only part which could cause trouble is the commutator and brushes, but as the latter are so constructed as to make trouble extremely improbable the commutator is about the only element which need be watched. If it appears dirty, which is the most likely trouble, the application of a very fine grade of sandpaper will serve to remedy the disease. Care should be taken, however, to see that none of the particles of abrasive matter remain on the commutator.

Compound Winding and Its Effect.

In the Splitdorf lighting system, produced by the Splitdorf Electrical Co. of Newark, N. J., the method of output control is similar to that employed in the Berdon generator. That is to say, the main fields are permanent magnets and these are supplemented by a compound wound electro-magnetic field which permits the generator to produce more current at high speeds than would be possible with the permanent magnets alone Rotation of the Splitdorflite armature at a slow rate of speed results in the rapid "building up" of the auxiliary field produced by the passage of the armature current through the shunt winding of the compound field. Immediately this field becomes of sufficient strength, the electro-magnetic cut-out, contained in the arch of the permanent magnets, closes the circuit between the generator and the battery, with the result that almost all the current passes through the series winding of the compound field, thus further strengthening it. The output of the generator thus is practically constant, regardless of fluctuations in the speed of the armature, for the greater the current drawn by the battery the greater the flow through the series winding of the compound field and the more current there will be produced.

Sparking; Its Cause and Its Cure.

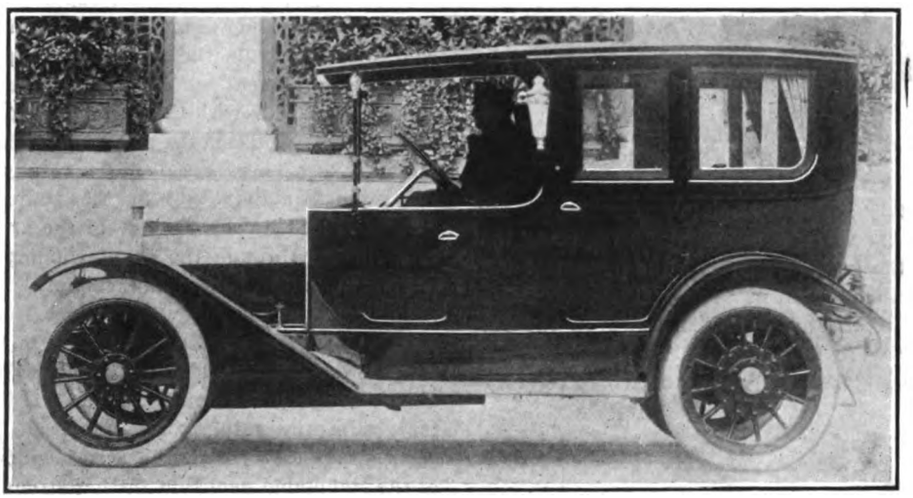
The Splitdorflite, like the others, is noticeably simple in construction, for which reason, if for no other, it seldom requires attention. The main bearings should be oiled occasionally, though care should be taken to see that the bearing at the commutator end is not flooded, or the familiar dark streaks will form on the commutator as the result of too much oil. Sparking at the brushes should be watched for as a sure tell-tale of loss of efficiency. When sparking occurs, the brushes should be taken out, cleaned and replaced, though no attempt ever should be made to change their position. Failure to generate generally can be traced to dirty brushes or commutator or loose connections, the correction of either of which faults scarcely requires a college education.

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LIMOUSINE IS ADDED TO MERCER COMPANY'S LINE

Vehicle Is Low-Hung and Is Designed for Town Service or Touring—Accommodates Four Passengers.

In adding to its line a limousine, the Mercer Automobile Co. of Trenton, N. J., whose name has been no less spread by the prowess of its racing cars than by the reputation for consistency which its stock models have won for themselves, has borne in mind the growing demand for a comparatively small and light closed car that is suitable alike for town service and for extended touring during the season when temporary retirement behind plate glass becomes a necessity as much as a luxury.



COMPACT, WELL-BALANCED LINES OF NEWEST MERCER LIMOUSINE

To this end the limousine which forms the latest addition to the line and is styled model 35 E, has been kept within well-defined lines, though it is not too small to be thoroughly serviceable; within its cozy interior there are accommodations for four passengers, two of them occupying the rear seat facing forward in the orthodox manner and the other two occupying folding seats which are so arranged that when they are not in use they become so much a part of the upholstery scheme as to be very nearly invisible. Which means, of course, that they are completely out of the way and offer no obstruction against which the other passengers can knock their knees.

In conformity with the comparatively short overall length of the new car—the wheelbase is 118 inches—the height has been kept down as much as possible, the reason for the unusual design being as much to obtain a well-balanced effect of the whole as it is to obtain a low-hung construction unobtrusive in appearance and as stable as possible. An idea of the actual height of the roof from the road may be judged from the fact that the ordinary pedestrian on the sidewalk can glance over the top of the car quite easily.

The interior of the body is tastefully trimmed in dark colored broadcloth and the equipment includes all of the usual toilet articles and other devices that assist in lending an air of luxury. The body is mounted on the stock model 35AB Mercer chassis which is rated at 35 horsepower and carries the usual T-head 4½ x 5-inch Mercer motor. The clutch is of the multiple disk type, having 48 saw steel plates, and power is transmitted through the intermediary of a four-speed selectively operated change gearset in which the third speed is direct drive and fourth speed an overstep. The rear axle is of the full-floating type, carried on three-quarter elliptic springs, the front springs being semi-elliptic in conformity to standard Mercer construction. As is the case with all the other cars in the Mercer line, spare tires are carried in irons at the back of the body, leaving the running boards clear of obstructions and incidentally giving the clean-cut appearance so much sought for.

The Fable of Ante-Election Dullness.

Whether there really is any reason for it, it nevertheless seems to be true that business men always have looked for dull times during the months preceding a Presidential election; perhaps their having looked for it is the reason they found it. Suffice it to say, however, that the idea is being dispelled and the origin of the fallacy is aptly hit by a journal of the shoe and leather trade, which says:

"Once upon a time the Lion, the Tiger, the Hippopotamus, the Jackass and the Elephant assembled themselves together for the purpose of selecting a date when they would call a meeting of the representatives of all the Fishes of the Sea, Birds of the Air, and the Beasts of the Woods, so that they might select a ruler of all of these who should serve for a term of four years. At this meeting it was decided not only to elect a New Ruler every four years, but the Jackass was also appointed a committee of one to notify all of the Fishes, Beasts, Birds and Reptiles that in the years when the rulers were selected they would not be expected to hustle quite so hard for their daily food; in fact, that in these years they were to voluntarily go on Half Rations, and spend the time usually devoted to caring for themselves and their families in bemoaning the fact that they were what they were; and also predicting direful things that would happen just as soon as the New Ruler was elected. All of the animals, big and little, attentively listened to and were guided by the bray of the Jackass except the Bees. The Bees called a meeting, buzzed the thing over, and then through their Queen issued the following Proclamation:

"'We, the Bees of the universe, have attentively listened to and also carefully considered you and your braying, Mr. Jackass, and we wish to say that there will be nothing for yours truly in "Laying Off" or "Half Rations" line. We are satisfied that there will be just as much Honey in the buckwheat in the years when the rulers are elected as in any other old years and we propose to get it. If you and the rest of the bunch want to grow lean and waste one year in every four, why go to it; you certainly have our permission. Growl and bray your heads off, if you choose, but as for us we will keep right on gathering honey at the old stand.'"

Heat that Removes Stuck Piston Rings.

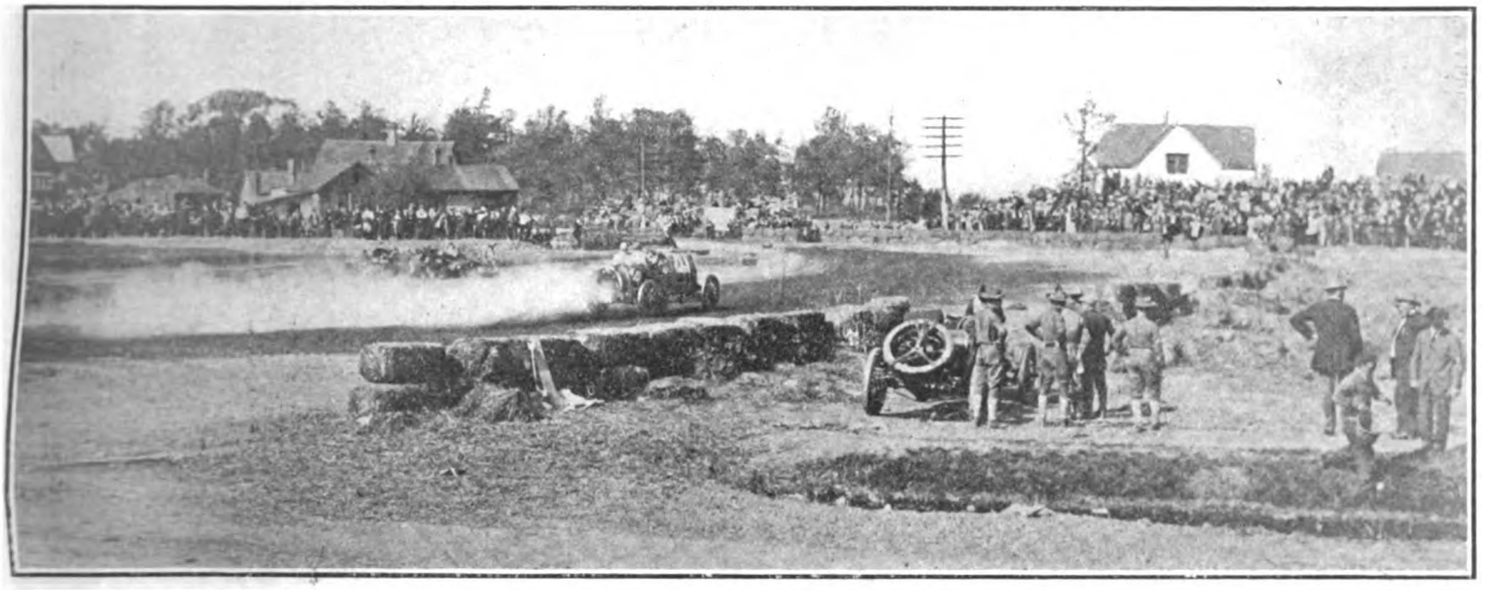
The application of heat is extremely efficacious in removing metal parts that are rusted or otherwise stuck in place. By the use of a little ingenuity, considerable trouble can be saved by temperature-raising processes. For instance, a stuck piston ring, which cannot be forced much without danger of breakage, almost invariably can be loosened by directing the flame of a blowtorch against the piston head until it becomes a dull red color, and then, after waiting a moment for the heat to subside slightly, applying a little kerosene to the rusted or carbonized joints. The ring that resists this treatment must be very badly stuck.

Iron pipe fittings or any other iron or steel parts that are screwed together will rust immovably in place if they are moistened with a little saturated solution of sal ammoniac, or even of salt, before being screwed together.

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CONSISTENCY NETS BRAGG THE GRAND PRIZE

Covers the 410-Mile Hay-Protected Course in 359 Minutes—De Palma, Always a Dangerous Contender, Again Victim of Misfortune —Roberts and Endicott Take Minor Events.



"BREASTWORKS" OF BALED HAY ON FOND DU LAC TURN AFTER BEING "ASSAULTED" BY FONTAIN (LOZIER)

It is a far cry from the baled cotton which played such an important part at the battle of New Orleans, nearly 100 years ago, to the baled hay which constituted a not inconspicuous and not invaluable feature of the Grand Prize and other races which marked the Milwaukee speed carnival which was brought to a close on Saturday last, 5th inst., when the Grand Prize was gathered in by Caleb Bragg, driving a Fiat. The baled cotton and the baled hay, however, were utilized for the same purpose—to save American lives.

Hay as a preserver of life and limb during automobile races first was employed during the Elgin speed carnival in August last, but it remained for Milwaukee to put it to its fullest use. It formed the "breastworks" on all turns of the somewhat treacherous course and served alike to preserve spectators and competitors, forming a most efficient bumper. It did not avail to save Ralph De Palma, who won the Vanderbilt Cup race on the previous Wednesday, but it saved Louis Fontain, who twice ran wild when rounding two of the treacherous turns and charged full tilt into the baled hay. He somewhat mussed the hay, but his life and his limbs were preserved and his car escaped with little damage, as did the spectators and the Wisconsin militiamen who were on duty there.

De Palma sustained his accident on a comparatively straight stretch of the bumpy and undulating course. On the very last lap, when he endeavored to pass Bragg, the road proved too narrow, and in consequence he grazed Caleb Bragg's Fiat and flew the course with disastrous results. His car overturned and both driver and mechanician were badly injured. De Palma suffered a broken leg and a wound in the abdomen, which latter promised sad results but which, at last accounts, it was believed happily had been averted. His mechanician was less seriously hurt, bruises and a severe shaking up being his portion.

SUMMARY OF RESULTS
MILWAUKEE SPEED CARNIVAL.

Wednesday, October 2d
For the Vanderbilt Cup, 299.5 Miles.

1.	Ralph De Palma (Mercedes)	4:20:31.54
2.	Hughie Hughes (Mercer)..	4:21:14.34
3.	Spencer Wishart (Mercedes)	4:36:37.75

Friday, October 4th
For the Pabst Trophy, 220.6 Miles.

1.	M. Roberts (Mason).....	3:45:08
2.	H. L. Hastings (Fal).....	4:15:05

Friday, October 4th
For the Wisconsin Challenge Trophy, 173.5 Miles.

1.	Harry Endicott (Mason).....	3:05:44
2.	George Mason (Mason).....	3:42:40

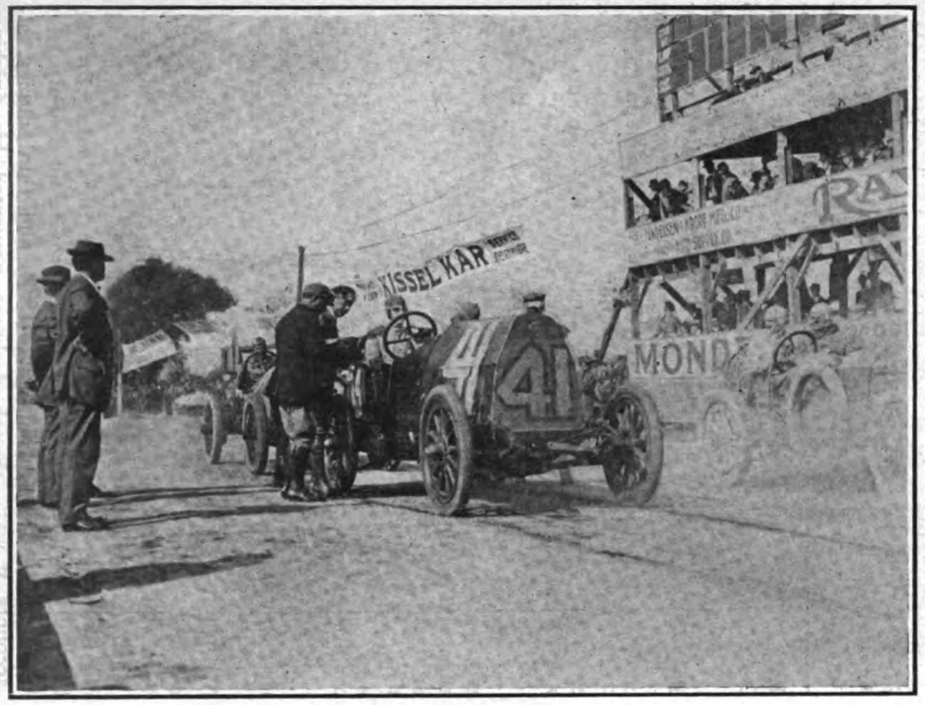
Saturday, October 5th
For the Grand Prize, 409.9 Miles.

1.	Caleb Bragg (Fiat).....	5:59:27.49
2.	Erwin Bergdoll (Benz).....	6:14:58.38
3.	Gil Anderson (Stutz).....	6:15:22.47

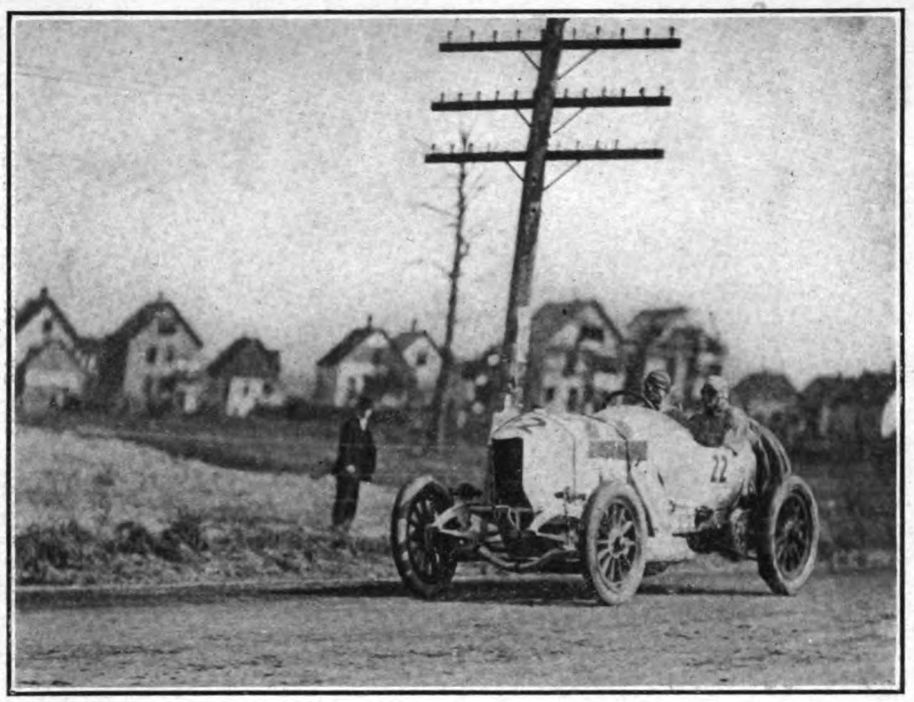
Caleb Bragg won the Grand Prize handily. He covered the 409.76 miles, which represent 52 circuits of the 7.88-mile course, in 5:59:27.49, or at an average of 68.45 miles an hour. Second place went to Erwin Bergdoll, who brought the Benz car over the tape 15.31 minutes later; third and fourth places went to Gil Anderson (Stutz) and Barney Oldfield (Fiat), respectively. Anderson finished less than a minute later than Bergdoll, while an interval of four minutes separated Oldfield from the Stutz pilot. George Clark (Mercedes) and Robert Burman, who took Joe Horan's place in the Benz, were flagged while on their 49th and 48th laps, respectively.

As for the smaller car races for the Pabst and Wisconsin trophies, which were run on Thursday last, 3d inst., and which went for 220.64 and 173.36 miles, respectively, Mortimer Roberts took the longer of the two, covering the 28 laps in a Mason car in 3:45:08, and Harry Endicott, also in a Mason, took the other in 3:06:44. Roberts's average was 58.8 miles an hour; Endicott averaged 55.6 miles an hour for the 22 laps. Second place in the contest for the Pabst trophy went to Hastings (Fal), who finished in 4:15:04, and third money, although darkness prevented his finishing,

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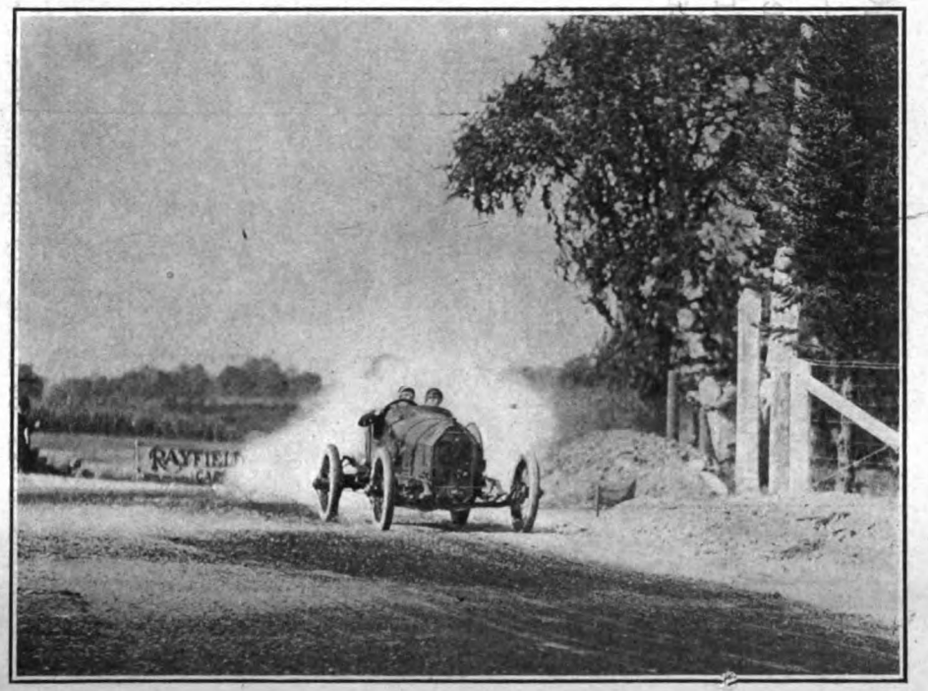
BRAGG AND HIS FIAT BEING COUNTED AWAY



DE PALMA IN THE CAR IN WHICH HE MET HIS ACCIDENT



"ACTION" WHEN DE PALMA STOPPED AT THE PITS



HUGHES AND HIS WIRE-WHEELED MERCER ON GRAVEYARD TURN

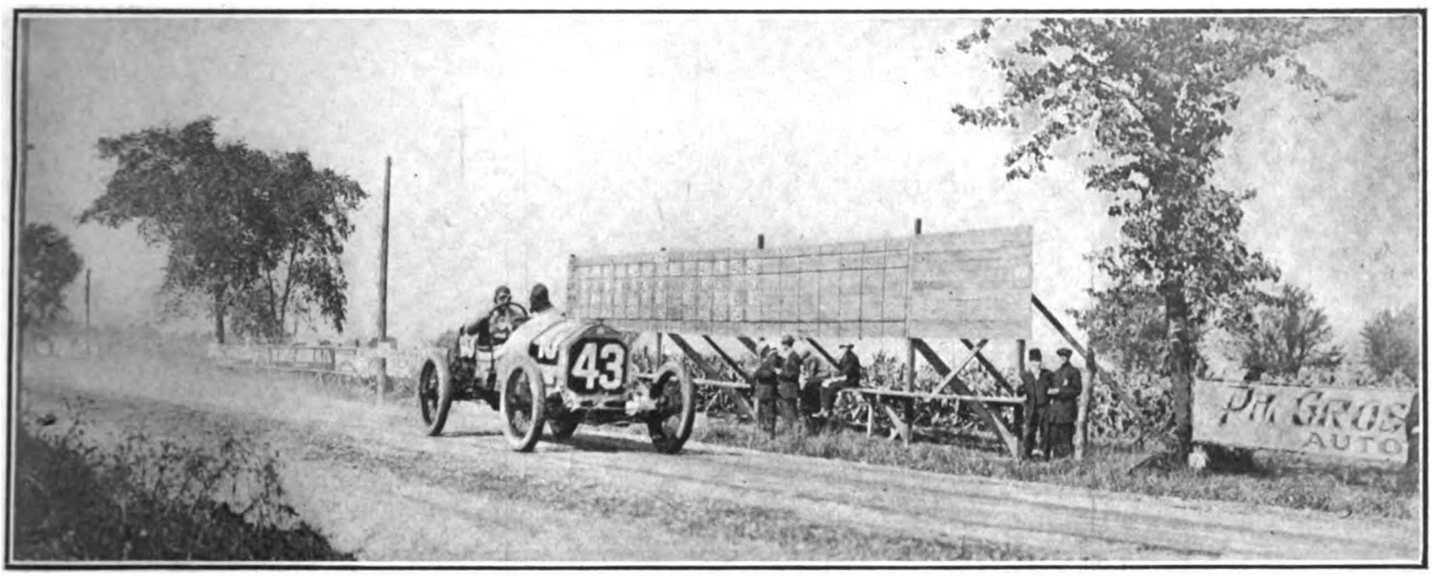
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to Chandler, also in a Fal car. Endicott's victory was in a measure a hollow one, for he finished over half an hour ahead of the only other contender, George Mason, his team mate, who completed the distance.

Entries in the smaller car events were not numerous. When, after delays occasioned by wet weather, which made the none too good course even more dangerous, the races were started at 1:30 p. m., but eight were lined up to contend for the Pabst trophy, and three only started in the smaller car event, Frank Kulick (Ford) having dropped out because of ill health, and John Heber (Studebaker 30) failing to put in an appearance.

Joe Nikrent (Case), J. Rooney (Bergdoll), Spencer Wishart (Mercer), H. Hartings (Fal), M. Roberts (Mason), Ed. Pullen drove a consistent but slow race. Chandler had about decided to retire when the announcement of the retirement of Hughes and Pullen opened the way for him to collect the "small change," provided he finished. He limped around the course at a 20 mile an hour pace and still was limping when darkness intervened, and those in charge decided to give him third place, although he had completed but 22 laps.

Endicott had it all his own way throughout the contest for the Wisconsin trophy. He took the lead during the first round of the course and held it to the end. Snyder (Mason), the only other contender besides Endicott and George Mason, quit on the second lap with a frozen clutch. So great was Endicott's lead over Mason after Synder's retirement that he had time to stop



ANDERSON IN HIS WIRE-WHEELED STUTZ AND A VIEW OF THE AD-PLASTERED COURSE

(Mercer), Chandler (Fal), and Hughie Hughes (Mercer) started in the Pabst event in the order named. Hughes early assumed the lead and held it until he was forced to retire during the 22nd lap with a broken differential pinion. Pullen, who had held second place as consistently as Hughes had clung to the leading position, assumed the lead when Hughes retired. His triumph was short lived, however, for he too was forced to retire during the 24th lap with transmission trouble. Roberts, who had trailed along after the two Mercer drivers throughout the major portion of the race, fell heir to the premier position and was not displaced throughout the remaining four laps. Spencer Wishart (Mercer) had been retired during the third lap with a broken crankshaft and a broken connecting rod had done similar duty for Rooney (Bergdoll) on his fifth lap. Joe Nikrent (Case) completed seven circuits, when he too was forced to quit with motor trouble. Hastings had had very little trouble and at the pit and smoke a cigarette before resuming his course.

Loafing did not characterize the running of the Grand Prize race. Sharply at 10:30 on Saturday morning the starting bomb was fired, and Burman led off in the Benz. He was followed at half-minute intervals by Fontain (Lozier), Tetzlaff (Fiat), Hughes (Mercer), De Palma (Mercedes), Wishart (Mercedes), Clark (Mercedes), Bergdoll (Benz), Horan (Benz), Anderson (Stutz), Oldfield (Fiat). Tetzlaff immediately set up a terrific pace, passed Fontaine on the first lap and completing the circuit in 6:20, he assumed the lead, which he held for 80 miles. Burman held second place throughout the second lap, but was forced to retire with a broken piston. Bragg then went up and was running 14 seconds behind the leader. The other ten contenders were strung out, with De Palma running third and Fontain (Lozier) in fourth place.

The end of the sixth lap saw Tetzlaff and Bragg in the same relative positions. Bergdoll had nosed out De Palma for third place and Anderson was running fourth. The others were strung out in the following order: Fontain (Lozier), Horan (Benz), Oldfield (Fiat), Clark (Mercedes), Hughes (Mercer). Spencer Wishart had been forced to retire while on his fifth round by a broken crankshaft.

Tetzlaff maintained his pace and increased his lead over Bragg. At the end of the eighth lap, when 63.04 miles had been reeled off, he was 42 seconds ahead of his most formidable rival. It was on this lap that Fontain swerved into the hay bunkers which protected the curve at Fond du Lac. Happily no serious damage was done, and after passing through the straw wall the driver piloted the car back onto the course and proceeded. The delay cost him his position, however, and he fell back to eighth place.

Forty seconds taken for a tire replacement at the end of the tenth lap cost Tetzlaff first place; it was then that Bragg went to the front and completed the 11th lap eight seconds ahead of Tetzlaff. Bragg did not long hold the position. The 12th lap saw Tetzlaff again at the head of the field with a lead over Bragg of 32 seconds. From this point until Tetzlaff finally was forced out of the race by a broken piston on his 30th round of the circuit, it was a case of see-saw between the two Fiat pilots. Bragg showed up in front at the end of the 14th lap, but was again passed in the 15th. Again in the 17th lap Bragg took advantage of Tetzlaff's stop for tire and fuel replacement and forged ahead and held the lead until half of the distance had been covered. At the end of the 26th lap, however, Tetzlaff again was leading the field.

When half of the 410 miles had been

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completed the contenders were running in the following order:

Tetzlaff (Fiat)
Bragg (Fiat)
De Palma (Mercedes)
Bergdoll (Benz)
Oldfield (Fiat)
Anderson (Stutz)
Horan (Benz)
Clark (Mercedes)
Fontain (Lozier)
Hughes (Mercer)

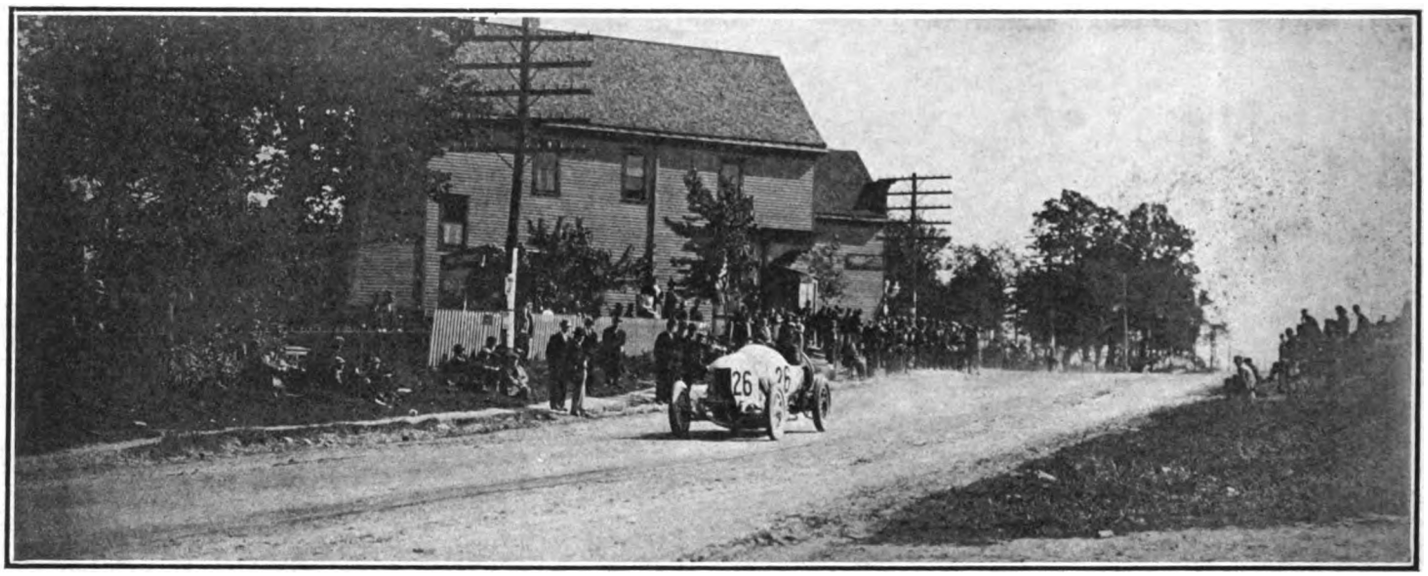
Fontain broke a steering knuckle during the 29th circuit, due to the strain which had been placed upon the member when he went through the straw barrier for a second time during the 20th lap, and was forced out of the contest; Hughes also retired with motor trouble.

gather the laurels. At the end of the 51st lap, when Bragg had received the green flag denoting the beginning of the last lap, De Palma had cut down the lead of the Fiat driver to 2 minutes 20 seconds, and throwing all caution to the winds, the plucky Italian "let out" on the last lap and, overtaking Bragg at a point of the road which really was too narrow for two machines to pass, misjudged the distance, touched the Fiat car and spilled all over the road. Fortunately both De Palma and his mechanician were thrown clear of the car as it turned several rapid somersaults before it finally brought up at the roadside. De Palma, however, was seriously injured. He received, besides a broken leg —the same limb which was injured at Danbury, Conn., in 1910—a wound in the abdomen which aroused grave fears. His mechanician escaped with a few cuts and bruises and a very severe shaking up. Bragg went on and, receiving the checkered flag, reported the accident to the officials.

netos and plugs, as did also De Palma and Tetzlaff. Anderson used a Mea instrument, and a Rayfield carburetter. Bragg and Tetzlaff also used Rayfield carburetters, and Mort Robert's Mason was similarly equipped. Roberts used a Splitdorf magneto.

Wetmore Stars at Sioux City.

Three of the four events which completed the program of the Sioux City Automobile Club's track meet, which was run on the one-mile circular dirt track in the Iowa city on Friday last, 4th inst., were Wetmore events from beginning to end. Wetmore, who drove a Chalmers car, succeeded in taking the most interesting number, the 30-mile contest for Class C cars, from the other two contenders, John Rai-



SPENCER WISHART (MERCEDES) AND A TYPICAL ROADSIDE CROWD GATHERED AT A FAVORABLE VIEWPOINT

Tetzlaff pulled away from Bragg and was leading by over three minutes at the end of the 30th lap, but the end of the 31st saw him pull up at the pits with a cracked piston, which forced him down and out. Bragg then assumed the lead and never was headed. At the end of the 33rd lap he had increased his lead over De Palma, who, in turn, had widened the gap between Bergdoll and himself to 7 minutes. Anderson, Oldfield, Clark and Horan were strung out in the order named. Burman replaced Horan at the wheel of the Benz at the end of the 32nd lap.

Anderson ran into third place during the 37th lap and see-sawed for the position with Bergdoll until the end of the 44th lap, when he finally nosed out the Benz driver and took the place "for keeps." Bragg had in the meantime been increasing his lead over De Palma until the interval separating them was over 6 minutes. De Palma increased his speed considerably during the 48th lap, however, in a final effort to

Considering the condition of the course, which was bumpy and trying and too narrow on the straight aways, Bragg's time of 5 hours 59 minutes 27.49 seconds, although by no means record breaking, was fast. Fortunately balmy weather prevailed, so that the surface of the course was at its best, which, as before stated, was far from perfect.

The fastest lap of the day—and, indeed, the fastest lap on the newly constructed course—was made by Tetzlaff, who completed his 26th lap in 6 minutes and 8.3 seconds, or at a rate of 77.2 miles an hour.

Bragg's Fiat was Michelin equipped, as were also both Robert's and Endicott's Mason cars. Bergdoll rode on Fisk tires. Both Bragg and Bergdoll used Bosch mag-

mey (Ohio) and John Overmire (Colby), in 31:31, the ten-mile free-for-all in 10.41¼, and a two-mile Class C event in 2:35. The remaining contest, ten miles, Class C, went to Raimey, who completed the distance in 10:33. Overmire acquired trouble which forced him out of the two-mile event. The summary:

30 miles, for cars with displacements of 231-300 inches—Won by H. A. Wetmore (Chalmers); second, John Raimey (Ohio); third, John Overmire (Colby). Time, 31:31.

Ten miles, for cars with displacements of 231-300 inches—Won by John Raimey (Ohio); second, H. A. Wetmore (Chalmers); third, John Overmire (Colby). Time, 10:33.

Ten miles, free-for-all—Won by H. A. Wetmore (Chalmers); second, John Raimey (Ohio). Time, 10:41¼.

Two miles, for cars with displacements of 213-300 inches—Won by H. A. Wetmore (Chalmers); second, John Raimey (Ohio). Time, 2:35.

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ENGLAND "STANDS PAT" ON HORSEPOWER RATING

Committee Recommends Retainment of Present Methods Which Take No Account of Stroke—Electrics Reclassified.

After nine months' consideration of the method of rating and taxing automobiles in Great Britain, the committee on Horsepower Rating of Motor Cars, which originally was appointed by the Treasury to investigate with a view to determining whether or not the present methods are fair to both the motorist and the government, at length has rendered its report. In it is set forth at great length that "the method or rating is substantially fair as between one car and another" and despite repeated requests that the committee consider the effect on horsepower of increasing the stroke, and in the face of the Royal Automobile Club's recent adoption of the piston displacement method of rating engines, which in itself is evidence of the necessity for eliminating stroke as a constant and taking it into consideration, it is recommended that the system of rating now in force be retained, with scarcely a change worthy of note.

If the recommendations of the committee are adopted, and it is altogether likely that they will be adopted, "petrol" engines, as they are styled, still will be rated according to their bores without regard to their strokes, despite the manifest unfairness of the system. According to the present method, which is recommended to be retained, the rating is obtained by dividing the square of the internal diameter of the cylinder by 2.5 as a constant in the case of a four-cycle motor, and 1.6 in the case of a two-cycle motor.

In the case of electric cars, the committee recommended that in view of the fact that electric motors generally average about 8 horsepower under normal conditions, such vehicles be rated hereafter between 6½ and 12 horsepower instead of between 12 and 15 horsepower. Provision also is made in the recommendations of the committee to provide for the taxation of motorcycles according to their horsepower; the present system exacts a tax of $5 irrespective of the size and power.

Opposite Rulings on Lighting Law.

Indication that there is merit in both sides of the question is found in two rulings on the law regarding the illuminating of cars which are left standing in the street at night, one decision coming from Connecticut the other from Iowa. In Connecticut several months ago it was decreed that a car left standing in the street at night should have its head and tail lights burning; now from Iowa comes the decision of Judge A. B. Thornell, of Harlan, that a car which stands on the street and the motor of which is stopped need not be illuminated. The decision, however, has been appealed.

Grennon and Kyle Share the Spoils.

Joe Grennon, who piloted a Mercer car, and Harry Kyle, who drove a Pope, shared honors at the five-event meet which was run on Saturday last, October 5th, on the half-mile Imperial track at Springfield, Mass. Each of the two men accounted for two races, and Grennon further distinguished himself by covering an exhibition mile in 1:24⅗. The remaining event on the program, which went for only half a mile, went to L. Menenghetti. The summary:

Ten miles, match race—Won by Harry Kyle (Pope); second, Joe Grennon (Mercer). Time, 15:28⅕.

Three miles, match race—Won by Joe Grennon (Pope); second, George Cook (Zust). Time, 4:27.

Five miles, for cars with displacements of under 450 inches—Won by Harry Kyle (Pope); second, Henri Hickman (Mercedes). Time, 7:47.

One-half mile, for cars with displacements of 300-450 inches—Won by Louis Menengretti (Zust); second, Joe Grennon (Mercer); third, Henri Hickman (Mercedes). Time, 0:49⅘.

Three miles, for cars with displacements of under 450 inches—Won by Joe Grennon (Mercer); second, Louis Menenghetti (Zust); third, H. Kyle (Pope). Time, 4:22⅘.

Glidden to Lead Tour to New Orleans.

Even though there will not be a National Reliability Tour this year, there at least will be a Charles J. Glidden tour, for Glidden himself has elected to lead a caravan of motorists over the identical route that originally was mapped out by the American Automobile Association; but it will not be for the Glidden trophy or for any other trophy. It is to be purely a sociability run and under the auspices of the Maxwell 50,000-Mile Club will start from Detroit on Monday, 14th inst., which was the date set for the start of the abandoned A. A. A. contest. The tourists expect to reach New Orleans, the one time destination of the A. A. A. tour, now deceased, on the 27th inst. Though the tour is being conducted by the Maxwell 50,000-Mile Club, and most of those who participate likely will drive Maxwell cars, even to Glidden himself, who will pilot a Maxwell of the type that last year helped bring home the trophy, it is open to all who drive, irrespective of the make or model of their cars.

DISBROW WINNER OF FOUR OUT OF SEVEN AT PEORIA

His Troupe Furnishes Entertainment for Implement Dealers' Convention at Two-Day Meet—Endicott and Nikrent Also Win.

Throughout the first day, at least, Louis Disbrow starred at the two-day racemeet which provided excitement for visitors to the National Implement Dealers' Association's Convention at Peoria, Ill., Friday and Saturday last, October 4th and 5th. Disbrow took four of the seven events on the program, including the feature number, the 10-mile free-for-all handicap, which he completed in 9:09. A five-mile free-for-all event also went his way, the distance being covered in 4:45 in the Simplex car. Endicott (Schacht) took two of the three events which remained on the program, and Nikrent (Case) disposed of the seventh.

Seven events were on the program for Saturday, and of these Disbrow "showed up" in three, the trio being time trials. Of the competitive events Endicott (Schacht) captured two, both of which went for five miles, his times being 5:00⅗ and 4:32 for⅗ for the respective numbers. Then ten-mile contest for light cars went to Wilbur (Fal) in 11:46⅘, and Monkmeier (Staver) disposed of the five-mile free-for-all in 4:46. The summary:

Friday, October 4th.

One mile, time trials—Louis Disbrow (Case), time 1:00⅗; Monkmeier (Staver), time 1:02⅘; Nikrent (Case), time 1:01⅘; Daubner (Halliday), time 1:10⅕; William Endicott (Schacht), time 0:58; Madden (Inter-State), time 1:03⅗; Disbrow (Fiat), time 0:54; Kilpatrick (Hotchkiss), time 1:03⅗.

Five miles, for cars with displacements of 231-300 inches—Won by Nikrent (Case); second, Disbrow (Case); third, Monkmeier (Staver); fourth, Daubner (Halliday). Time, 5:16⅗.

Five miles, for cars with displacements of 231-300 inches — Won by Endicott (Schacht); second, Madden (Inter-State). Time, 4:59⅗.

One mile, time trial—Disbrow (Fiat). Time, 0:52⅕.

Ten miles, for cars with displacements of under 450 inches—Won by Endicott (Schacht); second, Madden (Inter-State); third, Daubner (Halliday). Time, 9:49.

Five miles, free-for-all handicap—Won by Disbrow (Simplex), scratch; second, Kilpatrick (Hotchkiss), 30 seconds. Time, 4:45

Ten miles, free-for-all handicap—Won by Disbrow (Simplex), scratch; second, End-

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cott (Schacht), 5 seconds; third, Madden (Inter-State), 45 seconds. Time, 9:09.

Saturday, October 5th.

One mile, time trials—Monkmeier (Staver), time 0:62; Nikrent (Case), time 0:57⅗; Madden (Inter-State), time 0:57⅗; Kilpatrick (Hotchkiss), time 0:58⅗; Disbrow (Simplex), time 0:51⅗; Wilbur (Fal), time 0:69⅗; Hastings (Fal), time 0:66⅗; Endicott (Schacht), time 0:54⅘.

Ten miles, for cars with displacements of 231-300 inches—Won by Wilbur (Fal); second, Nikrent (Case); third, Hastings (Fal); fourth, Monkmeier (Staver). Time, 11:46⅘.

Five miles, for cars with displacements of under 451 inches — Won by Endicott (Schacht); second, Madden (Inter-State); third, Nikrent (Case); fourth, Wilbur (Fal). Time, 5:00⅗.

Five miles, free-for-all—Won by Endicott (Schacht); second, Disbrow (Simplex); third, Kilpatrick (Hotchkiss); fourth, Madden (Inter-State). Time, 4:32⅗.

Five miles, free-for-all handicap—Won by Monkmeier (Staver), 10 seconds; second, Madden (Inter-State), 20 seconds; third, Disbrow (Simplex), 40 seconds. Time, 4:46.

Hunter Scores in Non-Stop Contest.

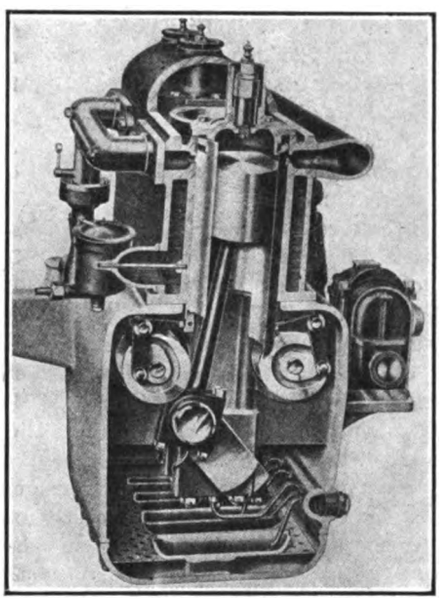
To maintain a speed of 20 miles an hour for five hours, and only once to deviate from the scheduled time to the amount of 15 seconds, is not child's play. It was performed, however, by G. F. Hunter, who on Saturday last drove his Oldsmobile for 100 miles over Long Island roads in competition with sixteen other members of the Long sland Automobile Club in the century, non-stop, fixed-time run which had been carried over from November of last year. Penalties were charged agoinst the competitors for deviation from the scheduled time at the controls, five of which were provided between the start and finish point at Jamaica, and the turning point at Hempstead. One point was charged for each 15 seconds the contestant was late or early at controls. Penalties also were meted out for road work, except on tires, and for stops other than those made necessary by traffic.

By acquiring but a single demerit, Hunter won the Herriman trophy and a new tire. Second honors went to Herbert G. Andrews in a Buick, who had a total penalization of 2 points. The other contestants were: F. Toby (Panhard), W. C. Bolton (Cadillac), H. H. Hillborn (Herreshoff), R. J. Perrine (Cole), A. S. Jesup (Oakland), G. Atwood (Cadillac), William Schimpf (National), P. Brotherhood (Cadillac), John Middleton (Cadillac), J. W. Mowrie, Jr. (Studebaker 30), A. E. Beggs (Panhard), C. H. Galt (Packard), F. H. Newcomb (Elmore), H. L. Koenig (Peerless), F. Belbon (Studebaker 30).

SLEEVE-VALVE MOTOR OF RADICAL DESIGN

Of German Origin, It Suggests Knight and K-D, But Is Different—Details Nicely Worked Out.

As if to refute the claims so often reiterated, not alone by those who use motor cars but by those who design them as well, that the motor car of the present substantially is the motor car of the at least not distant future, and that in minor details only will it be changed, the Fischer car, which recently made its appearance on the German market, embraces many new and



FISCHER MOTOR PARTLY SECTIONED

even radical ideas that cannot fail to excite widespread attention.

Although the four-cylinder block motor which forms the power plant is of the sleeve-valve type, it is not a Knight motor nor is it similar in any manner, save in the fact that sleeves are employed. The design is not wholly unlike the design of the Knight-Davidson crescent valve motor, which made its appearance at the Boston show last February, but the constructional details are altogether different.

Unlike the construction which obtains in the K-D motor, in which the two valves entirely surround the piston, overlapping each other at the ends, and are separated from the piston by a stationary sleeve, with the Fischer motor, the two valves, each of which forms a quadrant arc with regard to the piston circumference, do not meet and they contact directly with the piston. The valves are mounted opposite one another so that the piston contacts directly with the cylinder walls at portions not covered by the valves. The valves truly are crescent shaped, and the pockets which serve to contain them are formed by regrinding the cylinders, so that an arc of smaller radius than the radius of the original bore is ground out of each side. Leakage past the sleeves at the tapering ends is prevented only by the most careful workmanship in fitting the valves.

Motion is imparted to the sleeves through the intermediary of a cam shaft on either side of the crankshaft, both of which are operated by the orthodox gears. The cams which serve to operate the sleeves through a small bell crank are of the grooved type, whereby the action of the sleeves is made positive, and the timing exact. Lubrication is effected by means of a combination force feed and splash system embracing the use of the now familiar movable dams.

The design of the cylinder gear is unique. Each cylinder is fitted with a disk shaped head, not jacketed, and has cast in the center a hollow cylindrical projection which serves to house the spark plug. The disk is bolted in place as in orthodox construction, the use of a gasket being made unnecessary by virtue of the machined surfaces. When all of the separate cylinder heads are in place, a single casting, which serves to cover all four cylinders, is put in position and fastened by means of caps, which attach to the spark plug cylinders. As shown in the illustration, the latter casing forms a part of the water jacket, so that the head of each cylinder, though removable, is entirely surrounded with water, and the spark plug likewise is water jacketed, and moreover is adequately protected from mechanical injury.

Paper as a Material for Gaskets.

Fragile though paper seems to be, it is one of the best materials for making gaskets, shims or liners to be used where there is not sufficient heat to injure it. A good, hard paper is practically incompressible, so far as gasket making is concerned; it is, of course, very easily shaped and adapts itself to inequalities of surface. Even the heaviest pressures seem to have little or no effect on gaskets made of paper of good quality.

To Assist a "Starved" Piston Pin.

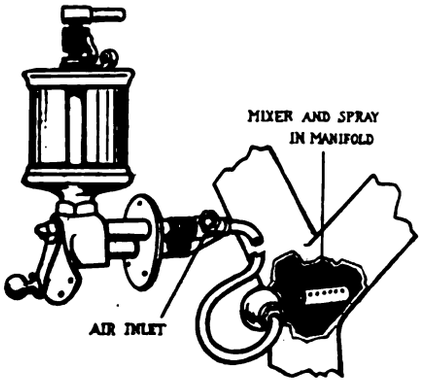
A piston pin which receives its lubrication through a hole drilled in the top of the connecting rod occasionally is "starved" because the hole does not catch sufficient oil. This state of affairs can be improved by countersinking the top of the hole to form a little basin to catch oil; the larger the area of the countersunk basin the more oil will be caught.

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Starter That Aids Cranking.

The next best thing to having a motor starter that will work 100 per cent. of the time is to have a motor that will start every time on the first turn of the crank. Under such conditions cranking loses at least half its terrors in the case of a big motor, and in the case of a little one, nearly all of them.

The device shown by the accompanying illustration is designed to eliminate the disagreeable part of the cranking—every turn beyond the first being relegated to the "disagreeable" class—and its purpose is clearly indicated by its designation, the Buckeye sure starter; it is manufactured by the Central Brass & Fixture Co., of Springfield, Ohio. In addition to facilitating motor starting by a priming process, the device enables the air supply to be varied in accordance with momentary requirements, which very often results in



BUCKEYE SURE STARTER

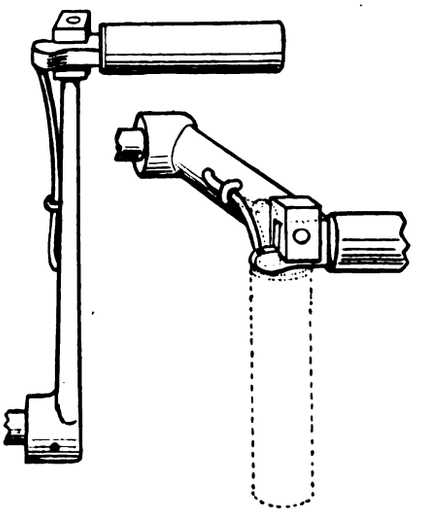
more economical running and a cleaner, cooler motor.

There is nothing complex about the Buckeye sure starter. On the dashboard of the car is mounted a brass fitting carrying a small glass reservoir for gasolene; from the reservoir a pipe leads to the intake manifold above the carburetter, the manifold being drilled and tapped to make the connection. A lever on the top of the reservoir permits the gasolene to be shut off or turned on at will. Below the reservoir is a second lever which controls an air opening on the other side of the dashboard. Thus either gasolene or air can be admitted to the intake manifold in any desired quantities within the capacity of the device, independent of the regular supply through the carburetter.

For starting the motor under ordinary conditions the lever on top of the gasolene reservoir is turned to the left until the gasolene level has fallen an eighth of an inch, and then shut off. This admits sufficient gasolene to the motor to permit easy starting without having to pump the cylinders full of gas from the carburetter. When the motor is running the air valve is opened and as much extra air admitted as the motor will take, the amount being regulated, of course, by the working of the engine. For high speed, the valve is opened wide and for low speed it is almost closed. A stop is provided to adjust the valve opening limits for motors of different sizes. By putting kerosene in the reservoir instead of gasolene, and allowing it to be taken into the motor while warm and turning over with the spark shut off, the cylinders can be cleaned of carbon, which will be loosened and blown out with the exhaust. For starting in very cold weather a little ether is mixed with the gasolene in the glass reservoir.

Folding Crank that Saves Wrists.

Newest of the devices designed to prevent the "deadly back-kick" of the gasolene motor cranked with spark advanced is the Wink safety folding crank, manufactured by the Wink Crank Co., of 2106 Superior Viaduct, Cleveland, O. As the accompanying illustration shows very clearly,

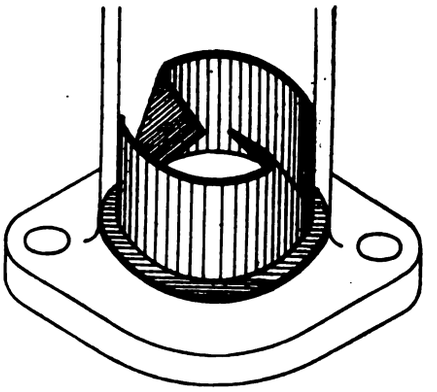


WINK SAFETY CRANK

the Wink device is peculiar only in one respect—that is, its handle, instead of being rigidly fixed to the crank arm, as is usual, is pivoted so that it is free to swing through an arc of quarter of a circle. A stiff steel spring, secured to the back of the crank arm, holds the handle normally in the plane of rotation of the arm; when the motor is to be cranked, the handle is swung around against the pull of the spring and is prevented from moving further than its normal cranking position by a stop. Of course, as soon as the handle is released it flies back under the tension of the spring, thus automatically folding. As the very great majority of injuries resulting from back-kicks are caused by the rigid handle striking the arm of the person cranking the motor, it is quite clear that with the handle out of the way, as it would be the instant after it was jerked out of the hand, most such accidents would be avoided, and this is the feature of the device that is most strongly emphasized by the makers. As the Wink crank is made in various sizes, it can be fitted to practically any car. It sells for $5.

Gasolene Mixer in Simplest Form.

In any auxiliary device designed for attachment to a motor simplicity of construction, of attachment and of operation are without doubt matters of no small importance, and in these respects the Wolf mixer, shown in the accompanying illustration, seems to have gone about as far as is possible. The device, which is marketed by A. M. Wolf, of 146 East 81st street, New York, is designed to be inserted in the intake manifold, pointing upward, having a flange to be gripped between the flange of the manifold and that of the car-



WOLF MIXING DEVICE

buretter. It consists of a short length of brass tube with two sections, at diametrically opposite points, bent inward, forming deflectors which cause the ascending current of air and gasolene to be violently agitated and spun into a spiral column, the result being the intimate mixing of the gasolene and air and the breaking up of minute particles of liquid gasolene. The mixer being made of a single piece of brass, there are no adjustments to make, no moving parts to wear and nothing whatever to get out of order.

"Pen Steel" for Small, Flat Springs.

For making small, flat springs or anything that should be made of thin sheet steel, an excellent material is "pen steel," which is the stock of which common pens are made. It comes in strips a few inches wide and in various thicknesses.

An old half-round file, with the teeth ground off and the edges ground sharp and smooth, makes an excellent scraper for scraping in bearings. Different sizes of scrapers can easily be made for different sizes of bearings.

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1,016,987. Driving Mechanism. Walter O. Foss, Newington, Conn., assignor to Charles E. Bunnell and Richard Bradley, Branford, Conn. Filed Feb. 23, 1910. Serial No. 545,410.

1. The combination of a driven shaft, a driving shaft, a pair of gears surrounding said driving shaft, a pair of gears in mesh with the other pair of gears and connected with said driven shaft, the gears of one pair being of different diameters, means for alternately putting the gears of the first pair into driving relation with said driving shaft, a gear surrounding said driving shaft, speed modifying and reversing means co-operative with said last mentioned gear, means for alternately putting a member of the speed modifying and reversing means into driving relation with said shaft ,and means for throwing said last mentioned gear into and out of driving relation with one of said first mentioned gears.

1,017,073. Internal Combustion Engine. Edward H. Belden, Pittsburgh, Pa. Filed Nov. 8, 1911. Serial No. 659,204.

1. In an internal combustion engine, a cylinder in combination with a piston operable therein, a head wholly within the end of the cylinder and having both its inner end and its outer end circumferentially engaged with and guided by said cylinder, means securing said head against movement in said cylinder and effecting oil and pressure tight circumferential joints between the cylinder walls and head at said ends of the head, said cylinder and head having admission and exhaust ports intermediately situated therein, between said ends of the head and between the planes of said joints, and means situated between the ports in the cylinder and the ports in the head for effecting the opening and closing of said ports in time with the movement of said piston.

1,017,074. Internal-Combustion Engine. Edward H. Belden, Pittsburgh, Pa. Filed Nov. 9, 1911. Serial No. 659,441.

1. In an internal combustion engine, a cylinder and a piston therein in combination with a cylinder head fixed in the end of said cylinder, the inner and outer ends of said head being tightly jointed to said cylinder throughout their respective circumferences, the intermediate portion of said head being of less diameter than the adjacent portion of the cylinder and concentric therewith, an annular valve cavity being thereby formed between said ends of the head, one side of said head and cylinder containing admission and exhaust ports which open into said cavity, an annular valve of slightly greater diameter than the head and of slightly less diameter than said adjacent portion of the cylinder and occupying said cavity, said valve containing a port positioned to register with aforesaid ports, said head containing a balancing port approximately opposite the first mentioned ports, means for supplying oil to said cavity and means for rotating said valve in said cavity in time with the movements of said piston.

1,017,075. Internal-Combustion Engine. Edward H. Belden, Pittsburgh, Pa. Filed Nov. 9, 1911. Serial No. 659,442.

1. In an internal combustion engine, a cylinder and a piston therein, in combination with a cylinder head fixed in the end of said cylinder, the inner and outer ends of said head being tightly jointed to said cylinder, the intermediate portion of said head being of less diameter than the adjacent portion of the cylinder and concentric therewith, an annular valve cavity being thereby formed between said ends of the head, one side of said head and cylinder containing admission and exhaust ports which open into said cavity, an annular valve of slightly greater diameter than the head and of slightly less diameter than said adjacent portion of the cylinder and occupying said cavity, said valve containing a port positioned to register with aforesaid ports, said cylinder containing a balancing cavity opening into said valve cavity between the ports in the cylinder and in communication with the piston space in the cylinder and valve operating gearing deriving motion from said piston.

1,017,078. Automobile Glass Screen Cleaner. Henry F. Buth, Chicago, Ill., assignor, by mesne assignments, to Kimbo Co., Chicago, Ill., a Corporation. Filed Apr. 22, 1909. Serial No. 491,522.

1. In a window cleaner, the combination of a member, one end of which is journaled in and passes through the frame of the window, a handle connected with said end on one side of the window, the portion of the member on the other side of the window arching toward the window and with the end of the member standing in close proximity to the window and substantially parallel thereto, and a wiper connected intermediate its ends to the last said end of the member, and being disposed between said end and the window, said wiper resting and being held against the window by the elasticity of the member, said wiper being adapted to be moved bodily over the window.

1,017,128. Front Axle Drive. Rollo Robin Bell, Wichita, Kan. Filed Mar. 13, 1911. Serial No. 614,095.

1. In a drive mechanism of the class described, an axle, a collar former interiorly with a socket and at its diametrically opposite point with a boss, the axle having an arm fitting at its end in the socket and having an arm disposed at its ends in juxtaposition to the boss, a screw threaded through the boss and having a portion projecting into the end of the last mentioned arm, a ball race held within the collar, a series of bearing balls in the race, a hub rotatably fitted upon the collar, a disk held for rotation with the hub and projecting at its peripheral portion between the series of bearing balls, and a drive shaft fixed for rotation with the disk.

1,017,171. Automobile Wheel. Philip J. Rivers, New Rochelle, N. Y. Filed May 9, 1910. Serial No. 560,200.

A wheel comprising a hub provided with an inwardly projecting spoke receiving ring, said ring being provided on its inner surface with end shoulders, said hub having its inner face provided with an annular shoulder, a non-rotatable bearing ring within the spoke ring and spaced therefrom, said bearing ring being provided with a flange for engaging one of the shoulders of the spoke ring, anti-friction bearings interposed between the spoke and bearing rings and engaging the shoulder of the bearing ring and one of the shoulders of the spoke ring, a washer seated on the hub shoulder and engaging the bearing ring, a resilient ring for holding the washer in contact with the bearing ring, an axle casing having end arms, means for pivotally connecting the arms to the bearing ring, an axle projecting through the casing and provided with end arms, a spindle carried by the hub and provided with end arms, and means for universally connecting the axle and spindle arms.

1,017,186. Carburetting Device for Heavy Fuels. Alfred C. Stewart, Los Angeles, Cal. Filed Feb. 27, 1911. Serial No. 611,287.

1. In combination with an inlet means for an internal combustion engine and a carburetter for supplying air and oil in definite proportions, of a chamber connected to said carburetter and adapted to receive the oil therefrom and provided with means for collecting condensed oil, a connection from said chamber to the said inlet means for passage of vapor and air to said air inlet means, said connection being provided with a throttle and a connection from the lower part of said chamber to said air inlet means for passage of condensed fuel from said chamber to the said oil inlet means and means for supplying heat to said fuel connection.

1,017,198. Electric Motor Vehicle. Elmore W. Bender, Los Angeles, Cal. Filed July 13, 1910. Serial No. 571,703.

1. In combination with a motor-generator having field and armature coils, and a storage battery, a controller for and connected to the storage battery, and a motor-generator controller connected to the battery and battery controller and connected to the field and armature windings of the motor-generator and adapted to connect said windings together in series or multiple relation.

1,017,216. Fluid Clutch. Gustave T. Johnson, Chicago, Ill. Filed June 6, 1911. Serial No. 631,580.

1. A fluid clutch comprising a cylinder, a hollow rotor mounted eccentrically in the bore of the cylinder and in contact with the wall thereof at one point, the cylinder having passages opening at one of their ends into the bore of the cylinder on opposite sides of said point of contact, and said passages having their other ends opening through one end of the cylinder, a head on the last-mentioned end of the cylinder, said head having chambers which are in communication, respectively, with the aforesaid passages, one of said chambers also communicating with the bore of the rotor, and the other chamber communicating with the bore of the cylinder, a valve controlling the flow into the bore of the rotor, a driving element connected to the cylinder, radially sliding impeller blades carried by the rotor, and means for operating said blades.

1,017,226. Device for Indicating the Intended Movements of Vehicles. George S. Matthews, Kansas City, Mo. Filed Nov. 29, 1910. Serial No. 594,786.

1. An indicator of the character described comprising a central block, differently colored globes attached to the opposite ends of said block, caps fitted over the outer ends of said globes, a longitudinally extending rod secured to said caps, a protecting band passed around said block and projecting beyond the joints between said globes and block, said band being also connected to the longitudinal rod, electric bulbs in said globes, means to support the indicator upon a vehicle, and means to illuminate said bulbs either separately or at the same time.

1,017,359. Controlling Means for Explosive Engines. Louis C. Wolfe, Altoona, Pa. Filed Apr. 19, 1910. Serial No. 556,400.

1. In an explosive engine, the combination with supply controlling mechanism, of a movable motion transmitting device connected thereto and having spaced abutments, and an actuating member that is movable between and engages the abutments.

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Stewart Delivery Cars

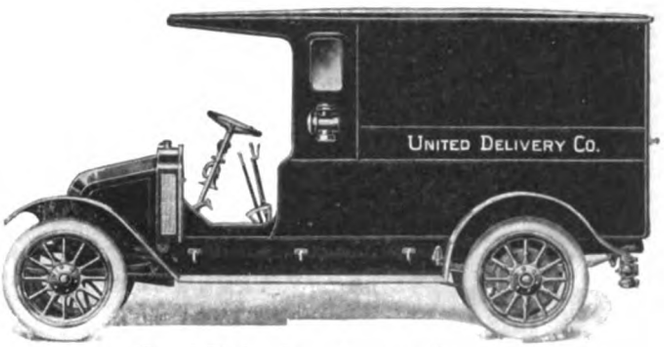
These Features Sell Stewart Cars

STEWART delivery cars have more strong selling points than any other delivery cars on the market. That's one reason why they are so easy and profitable to sell.

Here are some of the selling points that appeal strongly to the careful-buying merchant who figures closely the upkeep cost of delivery service.

1.—The Stewart costs less for upkeep, not because it never requires mechanical repairs — any piece of mechanism does—but because everything is **designed in units** and can be gotten at in a fifth or sixth of the time, thus saving much labor and greatly reducing expense. The labor cost for the yearly overhauling should be cut more than one-half on account of this great accessibility and removability of units.

2.—The **simplicity** of Stewart design helps keep down the cost of upkeep. The fewer and simpler the parts of a machine, the less likely they are to get out of order, and the more quickly and easily can they be removed and repaired or replaced.



Panel Body, Capacity 1500 Pounds



Open Express Body, Capacity 1500 Pounds

Other body styles include Express Body with Top, Stake Body, Wire Grating Body, Undertaker's Car, etc. A complete line to suit every business.

3.—The **small bore, long stroke, efficient motor** of the Stewart will appeal to the merchant's sense of economy. This motor, while it gives ample power for every possible use, is very economical of oil and gasoline, and causes little vibration—thus reducing wear and tear on the rest of the car. In a fleet of Stewart cars an extra motor or other unit kept on hand can be put into any car very quickly, thus necessitating no lost time for repairs.

4.—Stewart cars are made by a **strong,** amply financed company of **experienced** motor car manufacturers, having facilities for a large output. They know the commercial car business thoroughly and the cars they sell are built to meet the merchant's needs.

There are many other reasons why you should sell Stewart cars. Send for our catalog and our very liberal dealer's proposition.

Features Which Help Sell Stewart Delivery Cars

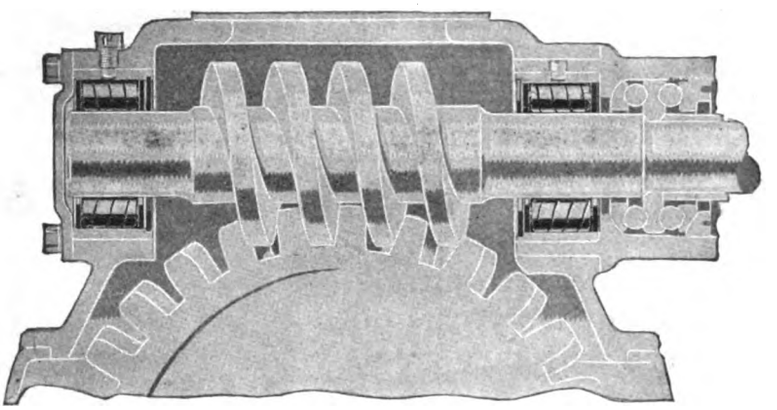
Continental Motor—30 H.P.
Brown & Lipe Transmission—
Timken Axles front and rear—
Multiple Disc Dry-Plate Clutch—
Big Tires—
Demountable Rims—
Wheel Base—126 inches.
Bodies of new design—Larger than usual, 7-ft. loading space.
Radiator at Dash—Out of harm's way—the popular construction abroad.
Complications Eliminated — Bosch single ignition (magneto). No spark lever, no batteries, timer, coil, etc.

Stewart Motor Corporation, Buffalo, N.Y.

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BRINGING UNDER ONE ROOF the several steels which, worked together, unite to form a perfect Hyatt bearing, is no inexpensive operation. To appreciate this, one need but examine the rigid specifications—the result of careful study and extensive tests—or view the laboratories, complete in every detail, where all raw material is forced to undergo the scrutiny of trained chemist and physicist.

THE EXPENSE IS JUSTIFIED, however, in the added responsibility it places upon the worker in the shop and in the resultant high standard maintained in finished bearings. Each man knows absolutely there will be no loss through material proving defective. He therefore strives the harder to eliminate that other loss, "a poor workmanship."

GIVEN THE ENVIRONMENT of modern scientific methods and equipment specially adapted to the work in hand. Place in it material and workmanship as outlined above. It is then readily realized why the word "Hyatt" today means to all who know—a quality bearing.

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the Automobile Public will become more thoroughly satisfied than ever that they are THE ONLY Storage Batteries really worth talking about.

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Use the Class "A" GLBA Battery with an Electric Lighting Generator
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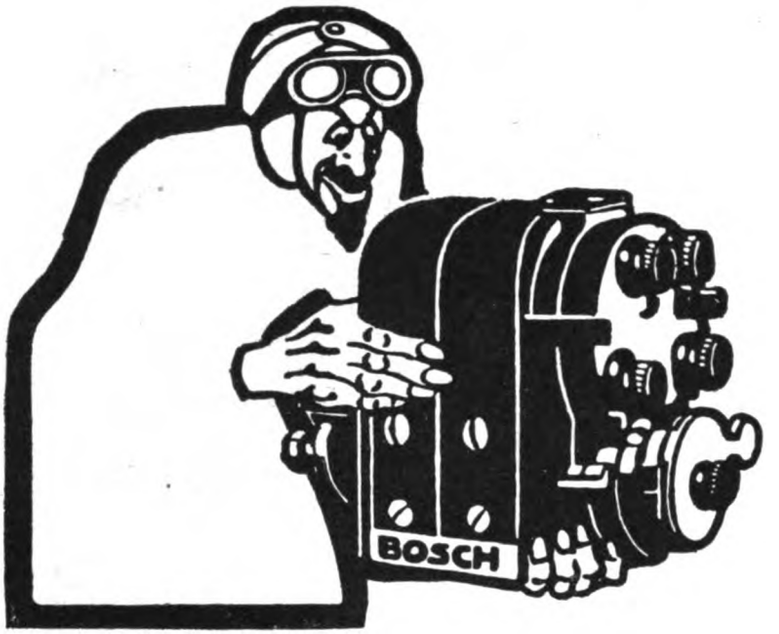
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Magneto and Plugs

Win—Of Course

The Vanderbilt Cup Race

1st—Mercedes	De Palma	Bosch Magneto
2nd—Mercer	Hughes	Bosch Magneto
3rd—Mercedes	Wishart	Bosch Magneto

Every Vanderbilt Cup Race Since 1908 Has Been a Bosch Victory

The Grand Prize Race

1st—Fiat	Bragg	Bosch Magneto
2nd—Benz	Bergdoll	Bosch Magneto
4th—Fiat	Oldfield	Bosch Magneto
5th—Mercedes	Clark	Bosch Magneto
6th—Benz	Burman	Bosch Magneto

Every Grand Prize Race Has Been a Bosch Victory

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BOSCH
Plugs

Also Win—Of Course

The Vanderbilt Cup Race

1st—Mercedes	De Palma	Bosch Plugs
2nd—Mercer	Hughes	Bosch Plugs
3rd—Mercedes	Wishart	Bosch Plugs
4th—Stutz	Anderson	Bosch Plugs

Last Year's Vanderbilt Cup Race Was a Bosch Plug Victory, Too

The Grand Prize Race

1st—Fiat	Bragg	Bosch Plugs
2nd—Benz	Bergdoll	Bosch Plugs
3rd—Stutz	Anderson	Bosch Plugs
4th—Fiat	Oldfield	Bosch Plugs
6th—Benz	Burman	Bosch Plugs

Last Year's Grand Prize Race Was a Bosch Plug Victory, Too

Thus in the Tests of Tests Bosch Magnetos and Bosch Spark Plugs reigned supreme. They evidence their supremacy, not only during such trying performances as these, however, but particularly in the cars of private owners.

For 1913 Season
Specify Bosch Magneto and Bosch Plugs
You Will Be Satisfied

Ask Your Dealer

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RAYFIELD

Milwaukee Victories Clinch Title



CALEB BRAGG

WINS GRAND PRIX

Caleb Bragg driving a RAYFIELD equipped Fiat won. Never lifted the hood.

Fastest lap: Tetzlaff driving a RAYFIELD equipped Fiat-120; time, 6.07. An average of 77.4 miles per hour.

The First Time Any Car Equipped With an American Carburetor Ever Won the Grand Prix.

Rayfield Suggests Supremacy

Whenever a motor car wins a race, breaks a world's record, annexes an economy trophy, or leads the field home in an endurance run, the motor world **anticipates** it to be **RAYFIELD equipped.**

So consistent has RAYFIELD performance been in every branch of motor endeavor, that its victories are accepted as a matter of course—as a thing to be **expected.** The RAYFIELD wins on its merits, not because competition broke an axle on its last lap. There is nothing accidental about RAYFIELD success.

The RAYFIELD is supreme on the contest field only because it first meets practically and positively the exacting requirements of **every-day** service.

You Can Get a RAYFIELD Anywhere

Put One on Your Old Car

FINDEISEN & KROPF MANUFACTURING CO.

21st and Rockwell Streets, Chicago, Illinois

EASTERN REPRESENTATIVE: Geo. Sumner, Inc., New York City, N. Y.

Distributors in all leading cities.

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SUPREME!

of the World's Greatest Carburetor

WINS VANDERBILT CUP

One, Two, Three!

De Palma driving a RAYFIELD equipped Mercedes won.

Hughes driving a RAYFIELD equipped Mercer was second.

Wishart driving a RAYFIELD equipped Mercedes was third.

Tetzlaff driving a RAYFIELD equipped Fiat-70 drove the fastest lap.

The Second Successive Year for the Rayfield to Win the Vanderbilt Cup

You Can Get a RAYFIELD Anywhere

Demand One on Your New Car



RALPH DE PALMA

Peerless in Competition Because Practical in Construction

The RAYFIELD is not a racing carburetor.

Every day in the week it is the winner of victories unheralded and unsung—en tour and on the boulevard, where motorists ask for unflagging utility, not speed—in the commercial field where persistent, dogged truck service has a money meaning all its own—the world over wherever consistent ECONOMICAL carburetion fills a 365-day-in-the-year want.

Therein lies our pride, not alone in the fact that the RAYFIELD in the last two years has broken more records in more different fields of competition than any other carburetor made.

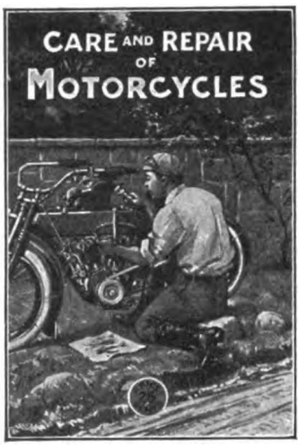
FINDEISEN & KROPF MANUFACTURING CO.

21st and Rockwell Streets, Chicago, Illinois

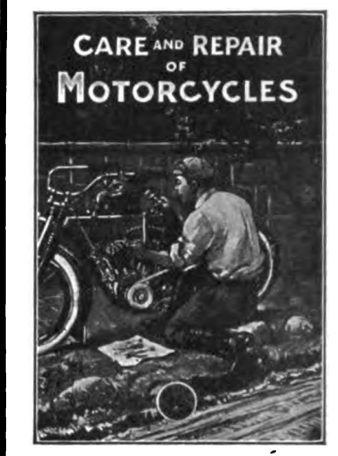
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A trouble saver for the motorcyclists



This book contains more practical advice for the rider, more good hard sense, more suggestions as to how to keep out of trouble. and how to get out of it, than has ever been printed heretofore in any one book.

¶ It fits the coat pocket and it includes free engine clutches, two-speed gears, mechanical lubricators and magnetos, together with special matter on motors, valves, carbureters, fuel and important general subjects, all plentifully illustrated.

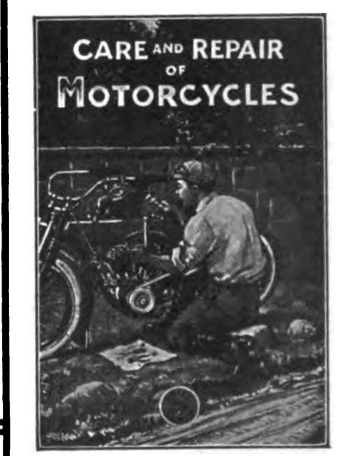
¶ Dealers and jobbers in all parts of the country are selling "Care and Repair of Motorcycles" to both new riders and veterans as the best aid in correcting and avoiding motorcycle trouble.



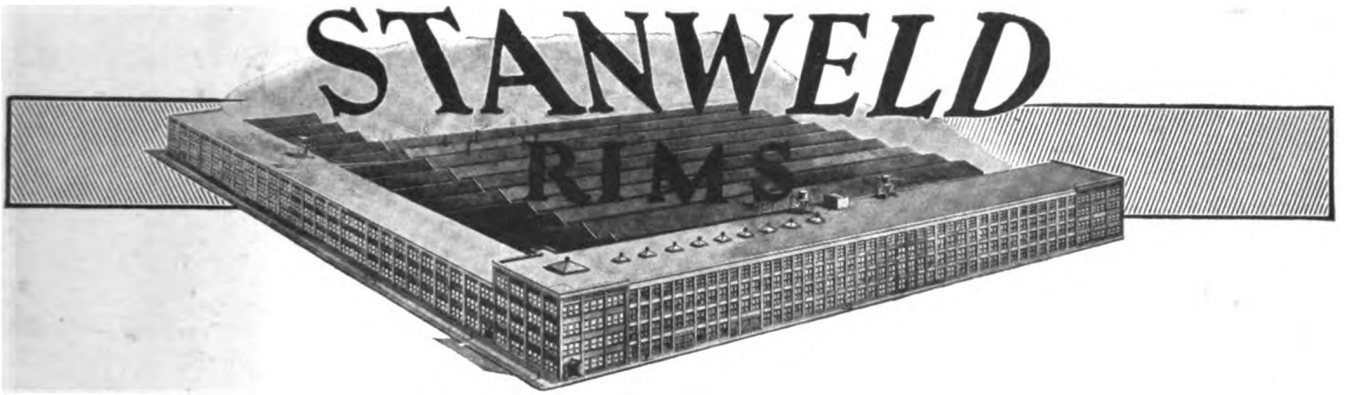
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Special Rates to Jobbers and Dealers on Quantity Orders.

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An exposition of the results of years of experience and experiment by

The
STANDARD WELDING
COMPANY Cleveland
Sixth City

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WORLD'S LARGEST PRODUCERS
of AUTOMOBILE RIMS

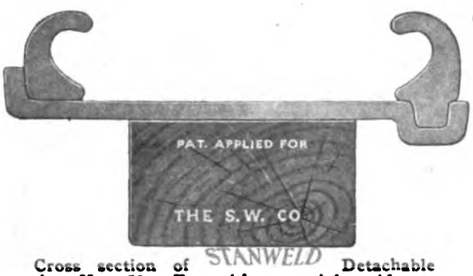
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NEW YORK CHICAGO DETROIT



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STANWELD

DETACHABLE
RIMS NOS. 50, 51, 52



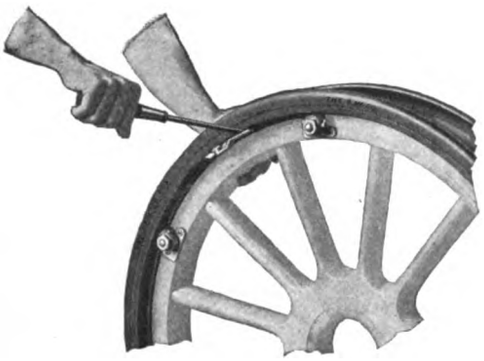
Cross section of STANWELD Detachable rim No. 50. For either straight side or clincher tires.



Cross section of STANWELD Detachable rim No. 51. For straight side tires only.



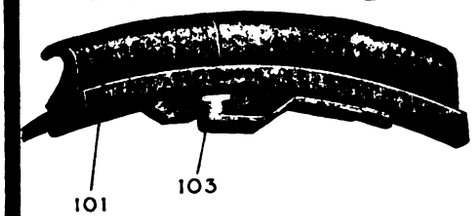
Cross section of STANWELD Detachable rim No. 52. For clincher tires only.

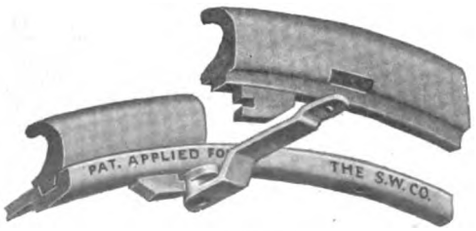


Method of unlocking latch.



Method of removing detachable side ring after latch is unlocked. Note position of latch.





DETAILS OF DETACHING MECHANISM.

Upper: Latch and ring locked.

Lower: Latch unlocked and ring partially removed. Note notch in base of ring which furnishes seat for screw driver.

STANWELD Detachable Rims are made in three types. The only variation in the three types is in the form of the rim base.

As shown in the above illustrations, No. 50 is a Universal rim that will accept either straight side or clincher tires by simply reversing the side rings. No. 51 is made for straight side tires only and No. 52 for clincher tires only, although by reversing the detachable side ring and using a rim filler, type No. 52 can be used for straight side tires.

All three types of detachable rims, as well as the demountable rims, have the same detaching feature.

The wonderful simplicity of the detaching mechanism is apparent to all who are familiar with other makes of detachable rims.

To remove a casing or tube it only is necessary to remove the detachable side ring.

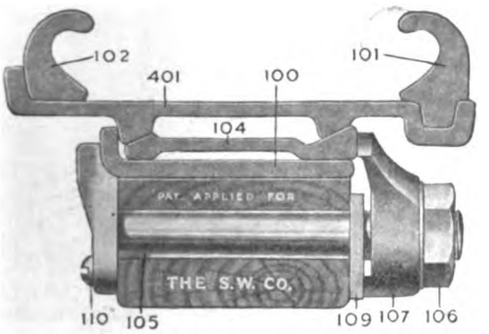
This ring is split transversely and has on either end slotted lugs which protrude through holes made in the rim base. These lugs are locked by means of a cam operating with a lever. The lever, when in locked position, holds the wide portions of the cam in the recesses of the lugs and thereby prevents their release. The latch is held in place by means of a small projection on the end of the lever, which fits into a recess made in the rim. A screw driver or similar tool is the only article required to operate these rims. First, the screw driver is inserted between the latch lever and the rim, and the ball catch pried from its seat in the rim. The latch is then swung outward as shown in the accompanying illustration and the ring pried from the groove. Only a mild effort is required to work this device and the position of the casing need not be altered to remove the side ring.

All STANWELD Rims are made of steel of a special composition and according to our own rigid specifications. They are guaranteed to be accurate to standard dimensions and perfect in form. They are thrice inspected before shipment, given a triple coating of galvanizing, and are mechanically the easiest and quickest operating detachable rims made.

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STANWELD

DEMOUNTABLE
RIMS NOS. 30, 40, 41, 42



No.
100. Felloe Band.
101 Detachable Side Ring.
102 Endless Side Ring.
104 Adjusting Ring.
105 Bolt.
106 Clamp Nut.
107 Clamp.
109 Clamp Washer.
401 Rim Base.

Cross section of STANWELD Demountable Rim No. 40.

STANWELD Demountable Rims Nos. 40, 41 and 42 are acknowledged by experts to be the most perfect Demountable Rims ever constructed.

They embody a quick detachable feature which operates independently of the demounting device. This detaching mechanism is the same as that used on STANWELD Detachable Rims Nos. 50, 51 and 52.

STANWELD Demountable Rims are the only rims that have the rim base perfectly supported at all points of its front and rear circumference.

They are the only demountable rims that do not require lateral movement of the rim base to tighten same on the wheel and are, therefore, the only demountable rims which have at all times a perfect lateral and concentric position on the wheel. Tires cannot wobble on STANWELD Demountable Rims.

The rim base is tightened by universal radial expansion effected by the tightening of clamps against the adjusting ring.

Owing to the peculiar construction of these rims no direct strain ever is placed upon the clamping devices nor does vibration of the rim base while traveling over rough roads cause friction between the clamps and the surface on which they bear, and wearing away of these parts is therefore prevented.

No handling of clamps with fingers is necessary, as the mere turning of the clamp nut with a wrench or brace unlocks the clamp and turns it clear of the rim where it remains without tightening.

Operation of STANWELD Demountable Rims is at all times certain. Rust cannot affect the easy working of parts. There are no complicated pieces to get out of adjustment or that can be damaged by ordinary service.

A wrench or brace and a screw driver are the only tools required to operate STANWELD Demountable Rims. Freezing of parts is practically impossible, and the rims can easily be operated after having been on the wheels for many months.

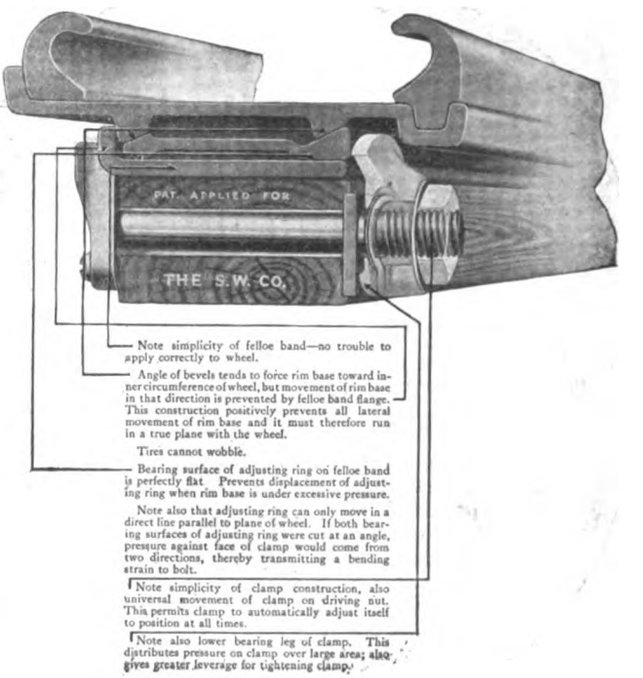
To demount the rim it is only necessary to give each clamp nut a couple of turns. This operation automatically unlocks the clamps and the rim with tire can easily be removed from the wheel.

STANWELD Demountable Rims cannot of themselves work loose. They will not squeak or rattle while in service. They will not shift on the wheels and will long outlive your car, giving good service to the last day of their use.

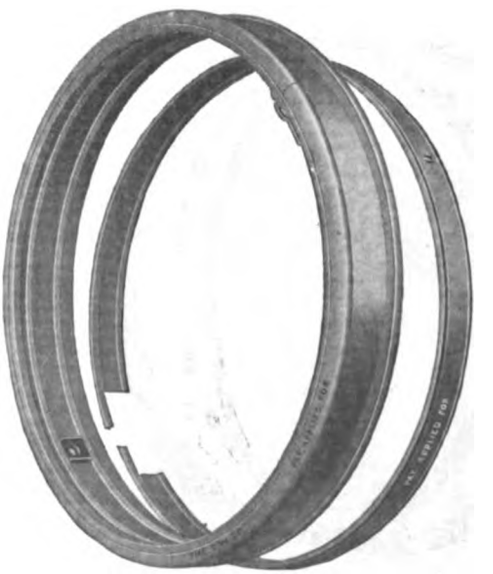
STANWELD Demountable Rims are exceedingly light in weight. Each part is made from material best suited to the functions of that part, and there has been no conservation of time or money to bring them to a point of perfection unattainable by others.

STANWELD Demountable Rims are without qualification superior to any demountable rims ever constructed.

They have been chosen as standard equipment on the cars of many of America's largest and foremost automobile manufacturers.



Section of STANWELD Demountable Rim No. 40 showing clamp mechanism.



Adjusting ring removed from rim base.

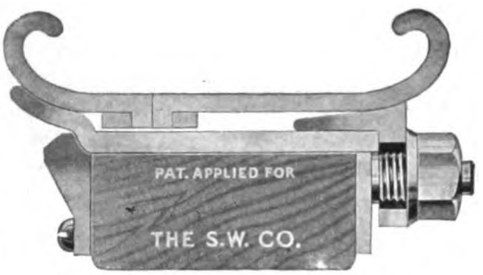
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STANWELD

DEMOUNTABLE
RIMS NOS. 30, 40, 41, 42



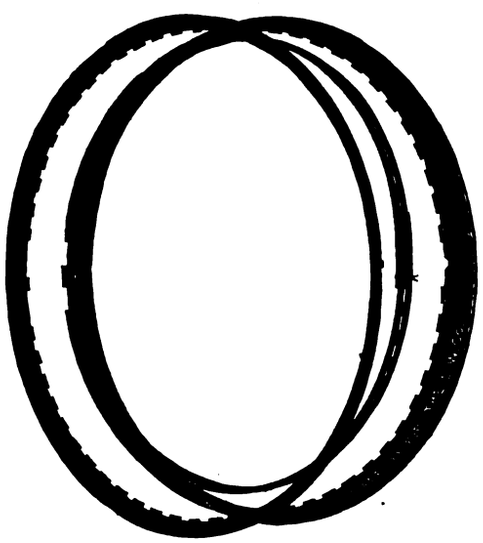
STANWELD Demountable Rim No. 30, locked on wheel.



Cross section of STANWELD Demountable Rim. No. 30. Clincher type.



Cross section of STANWELD Demountable Rim No. 30. Straight side type.



Detaching mechanism of STANWELD Demountable Rim No. 30. Rings forced in to show construction.

STANWELD Rim No. 30 is a circumferentially split rim differing considerably from other types of STANWELD Rims.

It is designed for those who require a demountable rim of exceedingly light weight. Although it is the lightest practical demountable rim made, it has sufficient strength to withstand any strain or pressure that may be imposed upon it.

The demounting mechanism consists of several wedges operating on bolts which extend through the wheel felloe and support the felloe band at its rear circumference.

This construction constitutes the most simple and strongest demounting mechanism yet devised for the securing of a removable rim to the wheel.

The detaching device consists of two flat spring rings of semi-circular form, one end of each being riveted securely to the wider portion of the rim base.

Each section of the rim base has inwardly protruding lugs which correspond with those of the other section. When the two sections are locked, these lugs are tightly bound together by the spring rings which have slots made to fit the lugs.

The free ends of the rings are locked by means of a swinging latch which in turn is secured by a cam lock. All parts of the detaching mechanism are permanently fastened to the rim base, and there are, therefore, no loose parts.

No circumferential movement of either section of the rim base is necessary to detach tires. No special tools are required to operate this rim.

Rusting of parts will not prevent the easy operation of STANWELD Rim No. 30, as there is no friction to overcome when operating.

For extreme simplicity, minimum weight and great strength, this rim cannot be duplicated.

STANWELD Rim No. 30 is made in both straight side and clincher types and in all the popular sizes.

This rim is being used as Standard equipment on many of America's most luxurious cars.

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This is the Announcement of a Change in the Policy of Marketing the

Electric Warm Hand Wheel

When we first decided to place the Electric Warm Hand Wheel on the market our plan was to sell the heating device together with the necessary wiring and attachments so that the purchaser might wrap and mount this device upon his own steering wheel. We find, however, that this plan is absolutely impractical and impossible.

The buying public will not take the pains to perform this work as it should be performed and as a result, if we were to continue to market this wheel in this manner, the carelessness on the part of the consuming public would cause us a lot of trouble in many ways. This being true, in future the Electric Warm Hand Wheel will be sold as a completely installed unit upon an extra steering wheel. In other words, instead of selling only the heating device and the necessary attachments we will sell these, correctly mounted on the rim of a steering wheel, which is identical with the wheel upon the car for which the heater is intended. So that the consumer, when he purchases an Electric Warm Hand Wheel, needs only to remove the rim of the steering wheel upon his car, substitute the rim we send him, and connect the wires.

In order to market the Electric Warm Hand Wheel in this way, it will be necessary for the retail price of this rim to be $15.00 instead of $10.00 as originally planned.

You can readily see that this is necessary for we are put to more expense under the new condition than we will receive out of it by the raise in price. But we are convinced that it is absolutely necessary for us to take this step, and in consequence from this date the Electric Warm Hand Wheel will be marketed as outlined herewith.

This does not interfere with the discounts, or dealers' proposition, in any way, but rather it makes a better proposition to them than heretofore.

Remember that the Warm Hand Wheel is a necessity right now and should be on every car and in use until late next Spring.

We still have a lot of good territory open which we will be glad to give to the right men. Better get in touch with us at once.

Warm Hand Steering Wheel Company

527 FIFTH AVENUE, NEW YORK

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"The Horn that's Made for the Discriminating"

TUTO HORN

THE TWO TONE HORN

A Profitable Guarantee.

GOODS manufactured by reliable concerns do not require a guarantee, as the entire future of that factory is dependent upon making a reliable product and seeing that the operation is satisfactory when in the consumer's hands.

¶ The most liberal guarantee will fail to make good breakage and poor operation if the design is inefficient, and especially if the manufacturer is not sufficiently expert to make the necessary improvements.

¶ Then some guarantees are written to protect the manufacturer rather than the customer. This is especially true when the product is of a complicated or breakable character and requires constant care and attention to keep in efficient operation.

¶ In the latter case if the operating instructions are not carefully followed, this apparently liberal guarantee becomes null and void and full prices are charged for all repairs and adjustments.

¶ The operating portion of the TUTO horn is guaranteed indefinitely and there are no rules which require that it be overhauled, oiled and otherwise inspected at frequent and stated periods. In fact, we know that the TUTO horn will last longer than the best car upon which it can be installed, without these working parts becoming defective.

¶ Then there is nothing to require lubrication or constant attention and adjustment, so that this liberal guarantee merely indicates our faith in our product and our willingness to make good what few defects that might escape our most rigid shop inspections.

¶ Naturally, the electric warning signal, with this kind of gurantee, and capable of producing a low note for regular service, taking the place of the bulb horn, and a loud note for emergencies—through the manipulation of one button—is the best equipment for any motor car.

¶ There is nothing better for standard equipment as the car manufacturer is not bothered by a request to make good on a "paper" guarantee.



TUTO Horn, $25.00

The Dean Electric Co.

260 Taylor Avenue, Elyria, Ohio

"Look for Dean where Quality's seen"



TUTO-ETTE $17.50

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The NATIONAL COMPOUND MIXER & PRIMER

SAVES 10% to 40% FUEL

Increases Power Speed and Flexibility

We Guarantee This

KILLS CARBON TROUBLES

Makes the Engine Run Better and Last One Third Longer

We Guarantee This

A device that will reduce expense and increase efficiency. Every customer of yours who is looking for the most and best out of his automobile, will take a buying interest in this device if you will simply demonstrate it, for we can prove that it will

Save from 10 to 40 Per Cent on Gasoline Bills
Increase Power from 10 to 40 Per Cent
Save 50 Per Cent of Engine Trouble
Prime the Engine Clean the Engine

We show it here—a small, compact, simple apparatus, attached to the dashboard—installed in 20 minutes—never out of order—can be operated in an instant.

The National Compound Mixer breaks up and mixes in exact proportion every drop of gasolene with the proper amount of air. In other words, it finishes the work the carburetor leaves undone and we do not have to tell you that ordinarily only about one-half of the gasolene is converted into gas.

The Priming Feature

alone is particularly valuable in that every cylinder can be instantly primed by simply operating the priming valve, which sends a proper amount of rich mixture into all cylinders, making starting easy under all circumstances.

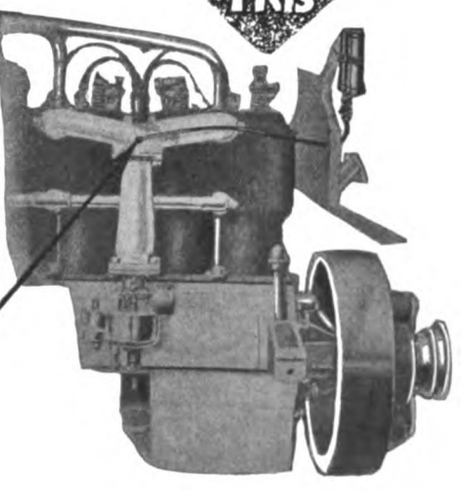
It Cleans the Engine

A couple of ounces of alcohol or kerosene dropped into the primer will, through a simple operation, clean the engine in a remarkably short time, thoroughly burning out every trace of foreign matter.



Your Customers Need It

and you can supply it if territory is open in your vicinity. It is distinctly up to you to write for our proposition. There is money in it for you.



National Manufacturing Co.
KALAMAZOO, MICHIGAN

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$100 CASH

For Your Ideas

For the best ideas and suggestions written by a Dealer—for Dealers —on how to deal with the "used" or "second-hand" car situation.

What's to become of the used cars? Who are the best buyers? What's the best way of getting in touch with them? Is it liner ads? Do you quote prices or don't you? Should they be displayed in the show windows? What is the basis of the allowance to make for trade-ins? These and a hundred other questions are bothering Dealers. Have you the solution or the remedy? What is it? How do **you** handle the situation?

Motor World will award $100, divided into four cash prizes of $50, $25, $15 and $10, respectively, **for the best articles or best ideas** on

HOW TO SOLVE THE

Used Car Problem

What we want is your **ideas,** your methods. It doesn't matter how you write—never mind the style or the dress, we want the IDEAS and the FACTS. Don't fear competition—your story, your plan may contain just the very idea we are looking for. If it does, you will get one of the prizes. In any event you will have a grand chance to exchange ideas with other Dealers through the reading columns—and the old saying, "two heads are better than one," applies to the used car situation as much as to anything.

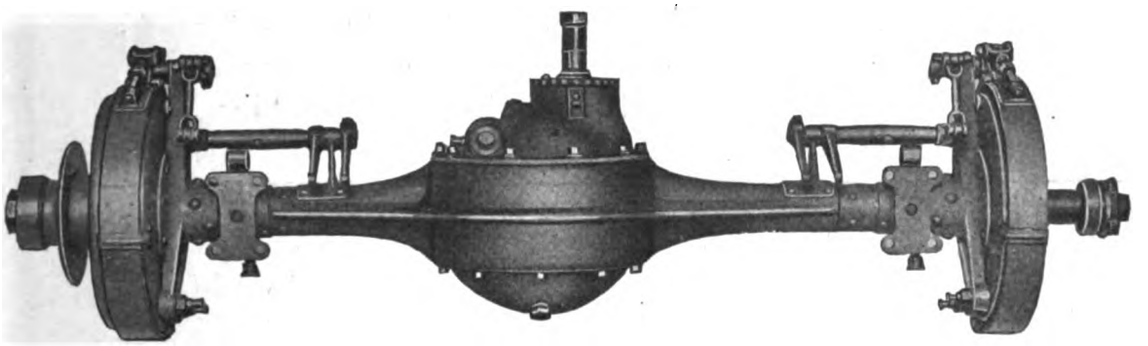
Write us today. Tell us how **you** do it or how you think the situation could or should be handled. Address your letter to "Used Car Competition" Editor, Motor World, 1600 Broadway, New York City, N. Y.

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American

American Axles

The perfection of their design underlies the Economy secured by their use



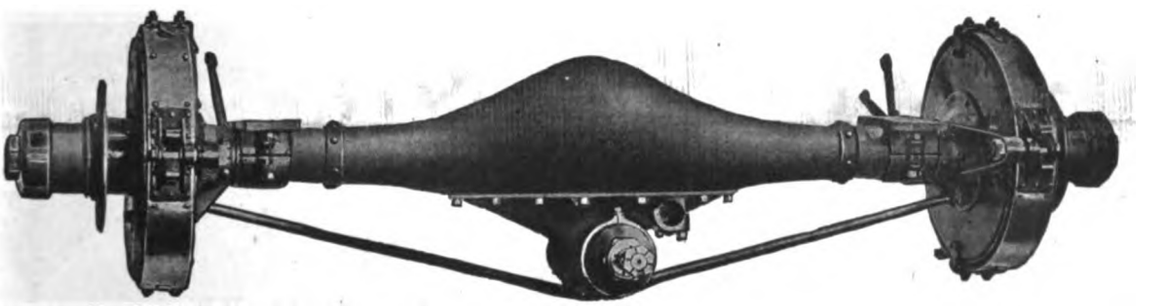
The special features that place *American Axles* in the foremost place, whether our Bevel Drive or Worm Gear Axles are considered, is not merely a matter of pride and satisfaction to their users.

Quality—mechanical excellence—in this case spells economy as well as the highest degree of efficiency.

The patented features that make *American Axles* distinctive are precisely those characteristics that render them marvels of light running.

Eliminate friction and you gain proportionately in available power, whether that power comes from a gasoline or an electric motor.

In *American Axles* only have you the choice of Bevel Gear or the Lanchester-Daimler Worm Drive, because we hold the exclusive American rights as axle manufacturers using the last named gear, which was accorded first place abroad—after years of test—before it was added to the American line by us.



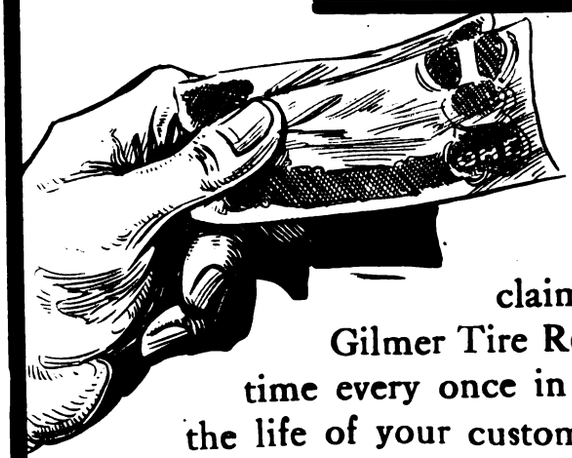
THE AMERICAN BALL-BEARING CO.

Edgewater Park and L. S. & M. S. Ry. CLEVELAND, OHIO

American

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It Will Cost Your Customer $1. to Double His Tire Mileage



This is a pretty strong argument for you to use in the sale of Gilmer Tire Repair Pliers, and the best part of this claim is that it is absolutely true. Gilmer Tire Repair Pliers, plus a few moments time every once in a while, will absolutely double the life of your customers tires.



If you are one of the many who has not received his shipment of Gilmer Tire Repair Pliers, we crave your further patience.

The unprecedented demand for these pliers has made it impossible for us to keep up with shipments. However, we are installing new machinery and shortly will have our capacity up to 3,000 sets of pliers per week.

In the meantime, shipments will be made just as rapidly as possible—all orders now on hand will be shipped positively before October 15th.

This is true because the tires are injured by small cuts and bruises which, if neglected, develop into blow outs. As a matter of fact, tires no longer wear out but blow out long before their service should end.

It is to enable your customer to protect his tires against these small injuries that Gilmer Tire Repair Pliers have been put upon the market. They make it possible for the tire user to open up the cuts clear to the fabric, thoroughly cleanse them and then insert a piece of rubber gum into the cut in such a way as to make the repair as strong as the original tire.

Nobody who has used rubber gum for repair under the ordinary conditions that obtained before the advent of Gilmer Tire Repair Pliers will need any urging to buy a set of these pliers. They will realize without argument that Gilmer Tire Repair Pliers alone make possible a perfect repair.

GILMER TIRE REPAIR PLIERS

G. WALKER GILMER, Jr.

52 North Seventh Street **PHILADELPHIA, PA.**

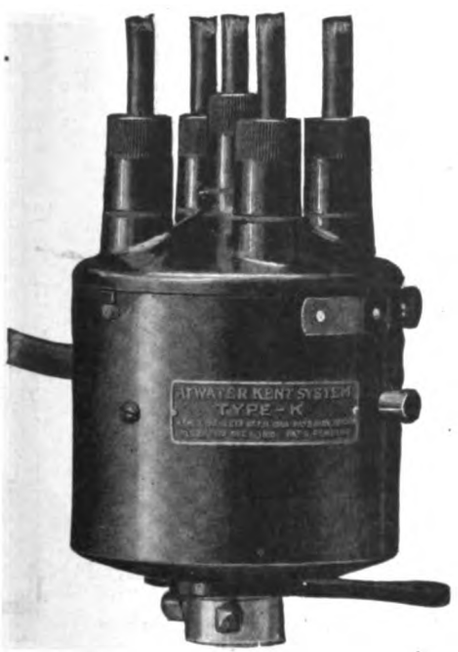
The illustrations at the right indicate the method of using Gilmer Tire Repair Pliers. First, the pliers are inserted in the cut. Then, as shown in the center, the cut is spread apart by pulling the lever "A," the end of which catches in a ratchet and holds fast wherever it is set until the cut is widely extended and the fabric exposed. The cleaning tool "B," is then used and the cut thoroughly cleaned, then a piece of rubber gum is placed on the cleaning tool "B" and pressed down against the fabric of the tire. The pressure of the hand against a spring releases the jaws of the pliers and the cut closes over the inserted rubber gum, making the repair as strong as the tire was when it was new.

$1- $1-

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The New Atwater Kent Ignition System

With Automatic SPARK ADVANCE



DISTRIBUTORS

New York.....E. J. Edmond Co.
Chicago.....Motor Car Supply Co.
San Francisco, Chanslor & Lyon M. S. Co., Weinstock-Nichols Co.
Milwaukee.....Julius Andrae & Sons.
Omaha.....Omaha Rubber Co.
Chattanooga.....Sanford Bros.
Dallas.....Fisk Co. of Texas.
Denver.....Auto Equipment Co.

Of extreme interest to every motorist

THE Automatic Spark Advance feature of the Type "K" Atwater Kent System is a long stride forward in ignition practice.

With this device, the control of the spark timing is entirely automatic (although the hand lever can be used if desired). This means that the spark is always properly timed to get the greatest possible power from the motor at any speed from three to seventy miles per hour.

No human mind can follow accurately the speed variations in an automobile motor and accordingly regulate the spark setting to get the best results.

The automatic spark control of the Atwater Kent System is more than human in its performance—it is sensitive to the slightest variation in speed—immediate in its response and positive in its action. The operator can forget his spark lever, knowing that his spark is being better regulated than he can do it himself.

The increased safety due to the automatic retarding of the spark for starting is alone more than sufficient to commend it to the modern motorist.

The Type "K" System is especially adapted for use in conjunction with lighting and starting equipment, or as sole ignition in place of the high-tension magneto. We regard it as being fully up to the high standard of merit for which Atwater Kent equipment is known.

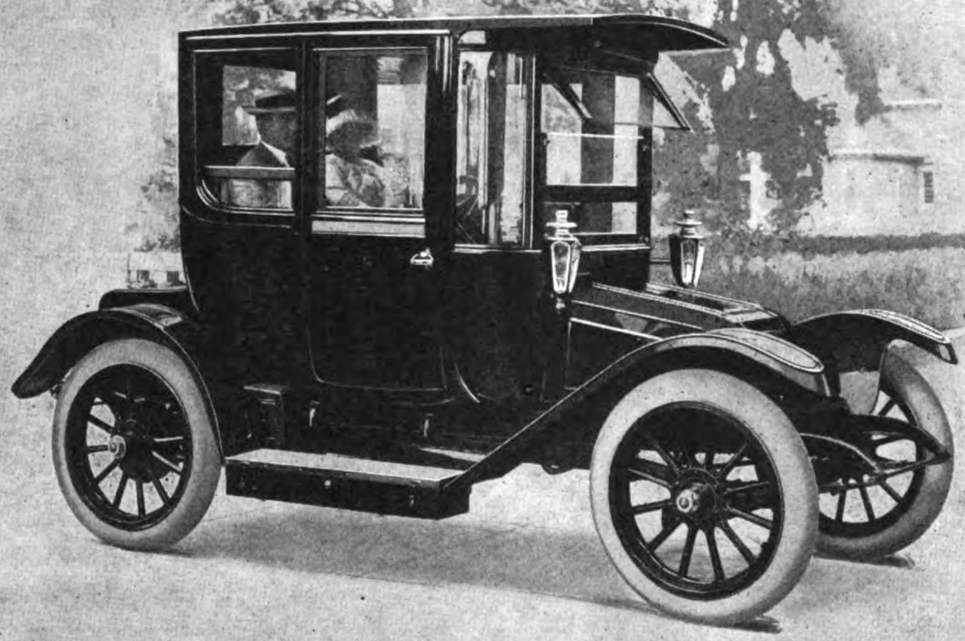
Interesting Booklet D and detailed information sent upon request.

Atwater Kent Mfg. Works

4940 Stenton Ave. Philadelphia, Pa.

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Buffalo Electric



DEALERS

THE car above is indicative of the style and design of all Buffalo Electric models for 1913.

In the past electric motor cars have made a special appeal to the eye. The mechanical construction has seemed a secondary consideration to the coach maker's art.

Buffalo Electrics mark an advance in their field. Engineers and designers with an extensive knowledge of electric pleasure car construction have worked hand in hand to achieve the proper combination of mechanics and beauty.

In fact, our Engineers are equally as important sponsors as our designers in announcing our models for 1913.

Model 29 Roadster . . . . $2600 F. O. B. Buffalo
Model 30 4 Passenger Coupe . $3200 F. O. B. Buffalo
Model 30-B 4 Passenger Coupe . $3300 F. O. B. Buffalo

THE BUFFALO ELECTRIC VEHICLE CO., 1222 Main St., Buffalo, N. Y.

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Opportunity

WE are now assigning desirable territory to representative and responsible dealers. Our selling policy is broad gage, and embraces in its scope an exceptional opportunity for your success. Advertising co-operation of the sales making kind supplements a national campaign. Buffalo Service is in advance of the times and insures the co-operation of our inspectors and experts in matters of care and maintenance of cars, batteries, or your selling efficiency.

We also manufacture commercial wagons and trucks from 1000 pounds to two ton capacity, and a line of industrial baggage or stock trucks for factory and dock use.

Write for particulars about the Buffalo line and territory.



Model 30—$3200

Its many uses and conveniences recommends it to all as the ideal town car. Speeds from 5 to 25 miles an hour.

Model 30-B—$3300

Built upon the same chassis, has more spacious body and all four passengers ride facing forward.

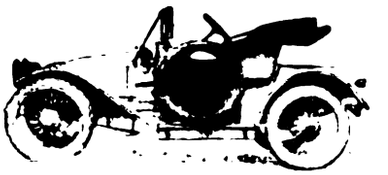
1913 MODELS



Model 29—$2600

For business and professional men. Exceptionally speedy and flexible. Speeds from 5 to 35 miles an hour.

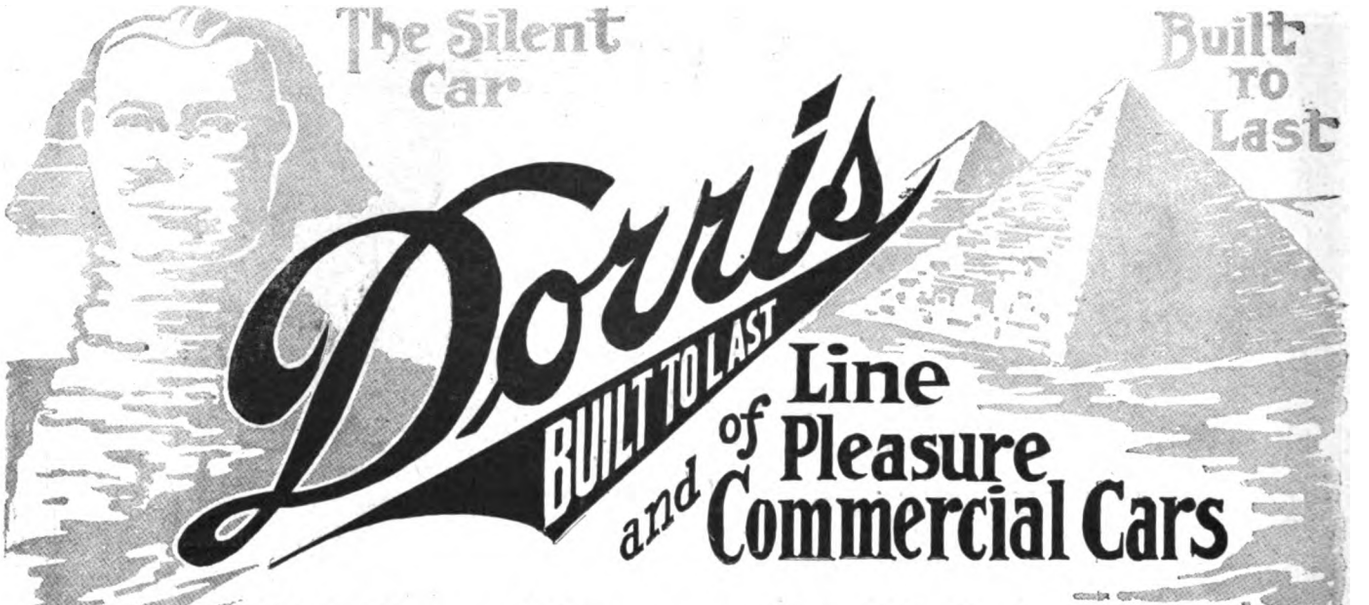
Equipped with wire wheels ($100 extra), the Buffalo Electric presents the same striking appearance that characterizes Continental European motors.



THE BUFFALO ELECTRIC VEHICLE CO.

1222 Main Street **BUFFALO, N. Y.**

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Dorris

BUILT TO LAST

Line of Pleasure and Commercial Cars

Plain Facts of Interest to You, Mr. Dealer

If you are "specializing" on one or two cars, stop it and make YOUR LINE COMPLETE—for the "one car" dealer today is **missing the most of his market.**

He is trying to trim the market to fit his car—to make the people want cars which don't suit their needs or purses and buy cars they don't want.

He is like a haberdasher who would sell only one kind of hat, or a clothier who would sell only serge suits of a certain price. **He Can't Satisfy Very Many of His Prospective Customers,** or build up much of a trade.

The day of the small, specialized shop is long since past in every kind of business. The **merchant who grows big** carries a FULL LINE. The Wanamakers, Marshall Fields, and Selfridges of today have goods to satisfy **all** the needs of **all classes of buyers.**

Automobile dealers **must** conform to the new conditions. Competition will soon force the one-car man out of the field unless he adds other cars—two, three, four, five or even more—till he has **a full line —a car for every class of buyer.**

PLEASURE CARS
$2500.00 to $3600.00
Electrically Started and Lighted

The Dorris Line
Of Pleasure and Commercial Cars

COMMERCIAL CARS
¾ Ton Truck—1½ Ton Truck
$2100.00 to $2500.00

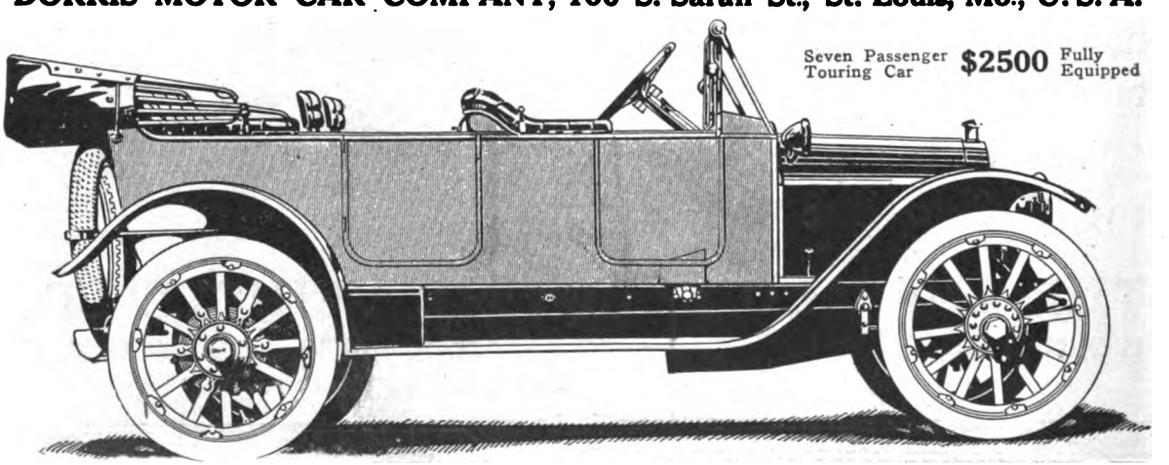
is absolutely essential to every dealer in high-grade cars who wants his line complete. For the Dorris is the greatest middle-priced car built in America—a car of the highest grade selling at a price which attracts the largest number of those desirable buyers who appreciate **REAL MOTOR CAR MERIT** and buy for the value they get.

The Dorris has the class of design, quality of material and workmanship and elegance of finish found in the very highest priced cars. It is luxurious and comfortable under all conditions, with a reserve power equal to the severest emergencies of road and hill.

This car is equally essential to the dealer with high or low priced machines. It presents a happy combination of the very highest quality and a moderate, logical price, which meets the approval of the experienced and most exacting motorist.

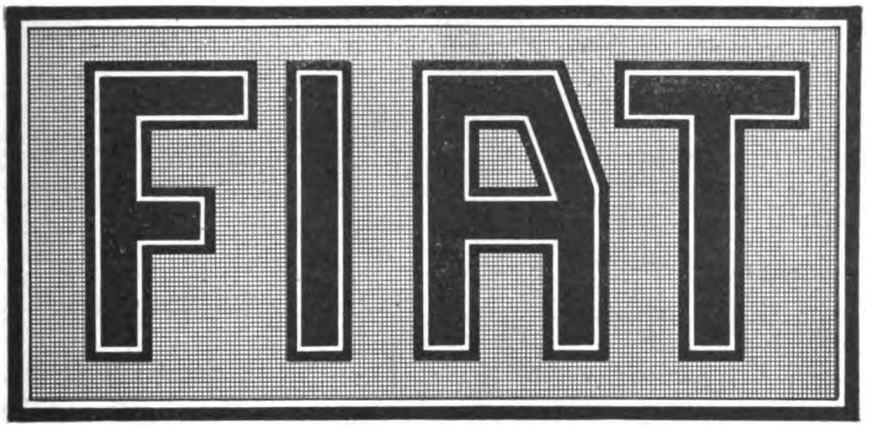
We have a proposition which will interest you—write us for full information about it and the specifications of our car.

DORRIS MOTOR CAR COMPANY, 100 S. Sarah St., St. Louis, Mo., U. S. A.



Seven Passenger Touring Car **$2500** Fully Equipped

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Dealer Permanency

The *Quality* of **Fiat** Cars is constant. It never varies. The **Fiat** of each succeeding year can be depended upon to possess the same superiorities over other cars as did the **Fiat** of years before. This is to dealers a *guarantee of permanency*—satisfied customers—an unusual percentage of repeat orders.

Fiat Cars and **Fiat** Service Stations are found in every civilized country, making **Fiat** the logical automobile for town or touring purposes at home or abroad.

Serious consideration of this world-wide **Fiat** ownership and service, this universal desire to drive **Fiat** Cars, this testimony in every tongue to **Fiat** superiority, is worthy the time of any person intending to buy or sell a motor car.

PRICES

6 Cyl. 50 H.P.	4 Cyl. 55 H.P.	4 Cyl. 35 H.P.
$5,000	**$4,500**	**$4,000**

Fiat Prices are No Higher Than Those of American Cars. Fiat Values are Far Greater. The Distribution of Fiat Cars is an Attractive Proposition for Dealers

When Writing Address Sales Dept. D

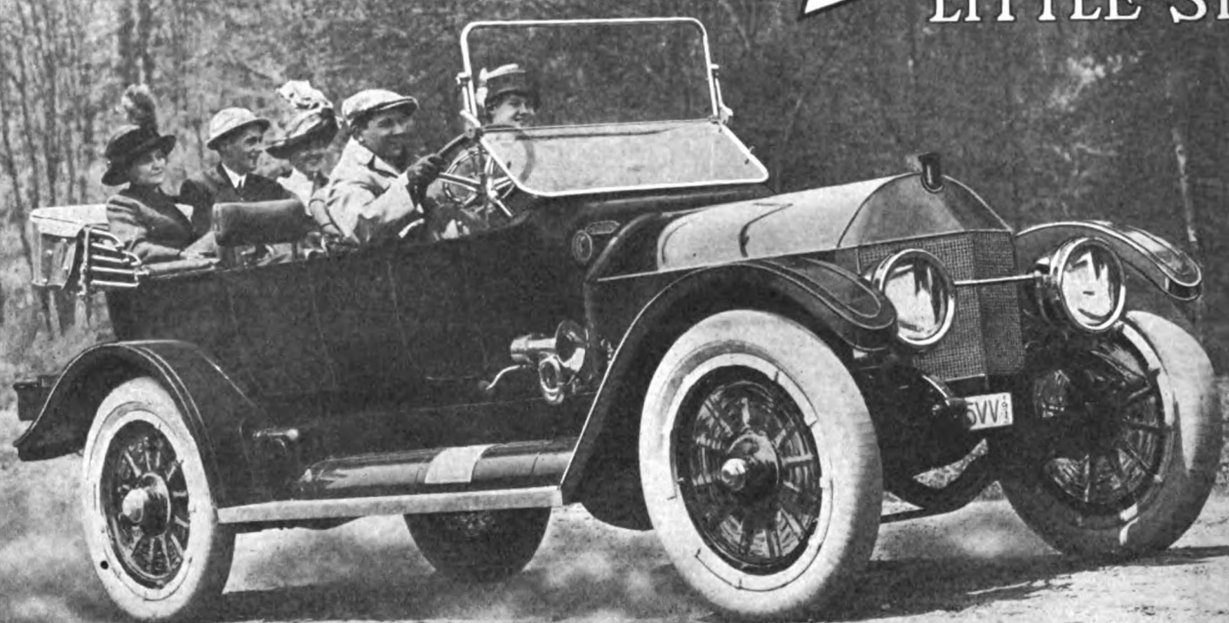
Turin, Italy **F·I·A·T** **Poughkeepsie, N.Y.**

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WHY DO THEY SMILE ?

IT'S A Knox "LITTLE-SIX"



"IF YOU HAVE NEVER DRIVEN ONE UP A HILL YOU HAVE MISSED HALF THE SPORT OF MOTORING"

CATALOGUE MAILED ON REQUEST

KNOX AUTOMOBILE CO.

SPRINGFIELD, MASS.

NEW YORK BRANCHES CHICAGO

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The Right Foundation for a Motor Truck

Axles—front and rear—form the foundation on which the whole superstructure of the truck depends.

A motor truck is a commercial car and therefore must be dependable.

Dependable axles are fundamentally necessary to the dependable motor truck.

TIMKEN-DETROIT
AXLE EQUIPMENT FOR TRUCKS

In Timken-Detroit design every factor of motor-trucking service is considered—by engineers who have specialized on truck equipment since the days of the first commercial car.

By engineers whose experience covers every phase of truck axle equipment in every kind of a commercial vehicle from light delivery wagon to ten-ton truck.

By men who know what the engineers of a large number of truck builders (Timken-Detroit customers) have discovered in the actual use, first of other equipments, then of Timken Equipment, under every possible condition of truck service.

By engineers who study foreign practice as well as that of our own country.

Built Right, Too

Timken-Detroit Commercial Axle Equipment is built by an efficient organization of men who are specialists in axle production. By men who know every kink in axle manufacture from long experience and study—experience and study that goes back of the automobile age to the horse age.

Men whose heart is in the work—whose sole ideal is building the best possible axles.

Are Standing the Test of Use

Timken ability in designing and integrity in manufacturing commercial truck axle equipment are demonstrated by efficient service under the trucks of an overwhelming majority of the leading truck builders of the country.

The list of truck builders using Timken-Detroit equipment is an unanswerable argument for their quality and serviceability.

Write for a copy of the list—Bulletin 49

The Timken-Detroit Axle Company

Detroit, Michigan, U. S. A.

The only axle manufacturer licensed to make axles equipped with the famous Timken Roller Bearings

18

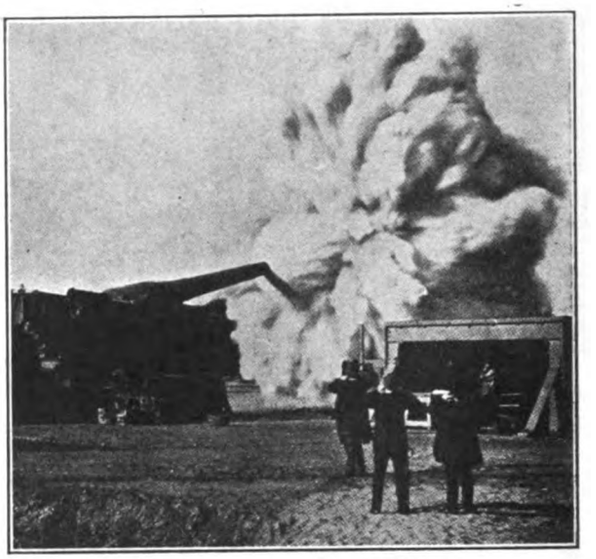
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JENCICK

This is a crank shaft advertisement although you may look at the illustration and wonder why—just for a moment.

Jencick crank shafts are made from Krupp Chrome Nickel Steel—identical in every chemical and physical feature with the steel used in making the most powerful and durable guns in the world.

When you are studying methods of prolonging the life of the crank shaft—when you are looking for material that will resist the torque depreciation and make crystallization a remote possibility, then study these figures.



KRUPP GUN IN ACTION

STRENGTH OF MATERIALS

We use Krupp Chrome Nickel Steel

Tensile Strength.	Elastic Limit.	In 2" Elongation.	Reduction in Area.	Condition.
135,900 lbs.	114,000	16%	62%	Oil Tempered
110,000 lbs.	95,000	23%	...	Normal
230,000 lbs.	220,000	6%	40%	Case Hardened
Best Machinery Steel Used by Majority Motor Manufacturers				
67,700	34,400	7%	23%	Oil Tempered
55,000	29,700	5%	21%	Normal
74,000	38,900	6%	12%	Case Hardened

We use oil hardened Krupp chrome steel for crank shafts—case hardened for cam shafts, wrist pins, push rods, etc.

We submit that it does not take an ultra-intelligent man to get another chapter on "Jencick quality" from this advertisement—and we are just giving a small part of the story here.

Efficiency and service can never reach the point of satisfying the truck owner if the engine is bought or built on the "keep-down-the-cost-of-production plan."

We want to correspond with quality truck makers who are looking for motors that will make good.

PROPULSION ENGINEERS

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TAKE YOUR CHOICE:

Lower Your Selling Price or Increase Your Profits

HOW?

BY building with Hayes sheet metal parts, the finest made in this country. We can make your complete equipment of sheet metal parts and deliver them better and cheaper than you can make them yourself.

We were the pioneers—we are the leaders. Our great plant turns out nothing else. Hoods, shields, mufflers, tanks, pans, fenders, bodies—everything in sheet metal that goes onto a car we make and make right. We deliver to you in any shape or stage of completion you want—fitted to your chassis and enameled, or ready for your own paint shop with anti-rust baked on.

Two Heads Are Better Than One

Send us your blueprints; let our engineers go over them. Let us make up for you a sample set of sheet metal parts complete. Let our skilled force and our years of experience add **their** weight to **yours.** The result will pay you and pay you big.

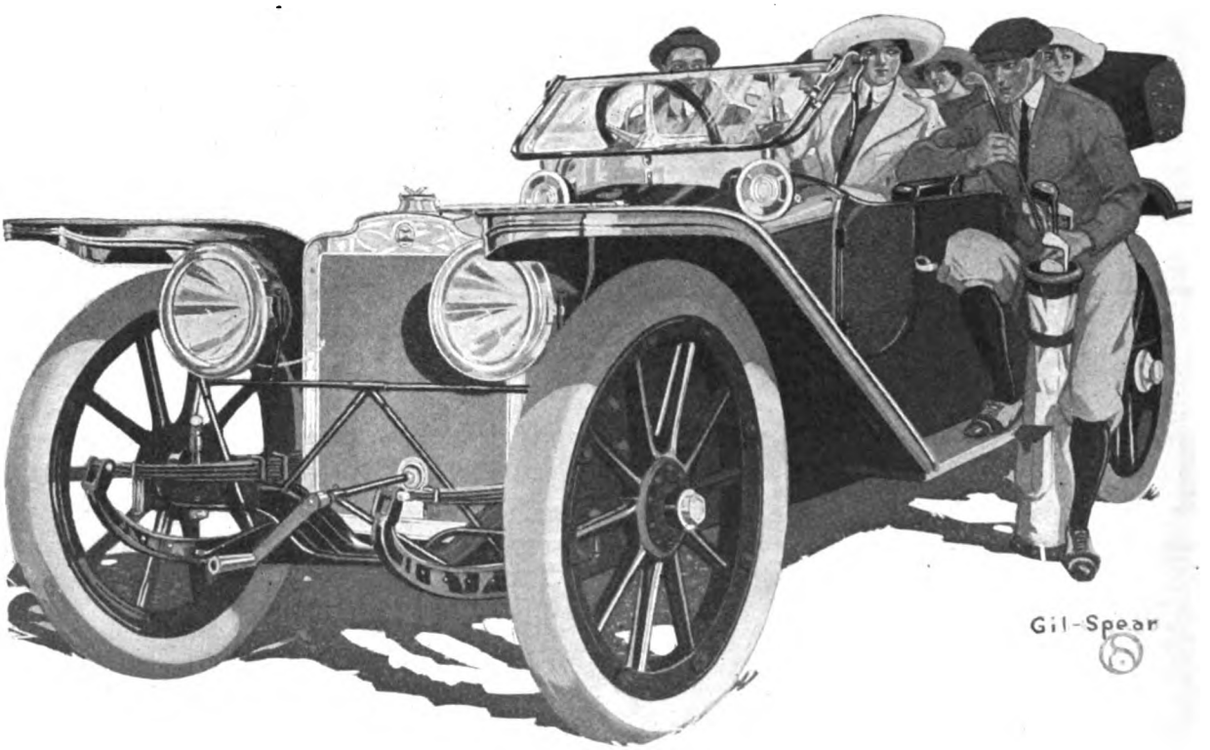
Hayes Manufacturing Company

DETROIT, MICHIGAN

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Positive Proof of the Growing Popularity of Underslung Construction

Actual sales gain last fiscal year over preceding year—183 per cent.
Actual sales gain first two months this year over same last year—175 per cent.



Electrically Lighted

AMERICAN UNDERSLUNG

Electrically Started

The "American Traveler" (Type 56A) Fully Equipped $4500

Six passengers. Motor four cylinders, 5 3-8-inch bore, 5 1-2 in. stroke. Wheel base 140 inches; tires 41 x 4 1-2 inch, front and rear demountable rims.

$4500 includes regular equipment as follows: combination electric lighting dynamo and self-starter, all five lamps electric ($350 outfit: $90 Warner clock combination 100 mile speedometer: fine plate glass wind shield; fine mohair top and curtains; high tension magneto and storage battery; two extra rims; shock absorbers; foot rest; robe rail; horn; jack, tools and tire repair outfit.

Country Sport in a Big Powered Car

DRIVING the big, huge-powered "American Traveler" is nothing but sport. The responsiveness of this best of all cross-country cars fills you with exhilaration—makes space seem the veriest kind of a pigmy. The "Traveler" is peerless mechanically, but—more than any other of the famous high-grade cars, it is the one for the great open country. Its wonderful power, speed and riding comfort make it so. There is none of that just-for-town atmosphere about the "Traveler."

You can sweep over the biggest hills on "high." Down country lanes you can rush sixty—seventy miles an hour without discomfort to your companions in the tonneau. There is no sidesway. If you like you can loaf along almost noiselessly at four or five miles an hour without "shifting" gears. The "Traveler" is just filled with delight—always obedient.

The "Traveler" is built on the famous "American Underslung" principle, which makes possible additional safety, economy and comfort.

The low center of gravity means *safety* and *added comfort.*

The Straight line drive means *less wasted power.*

The larger wheels mean *easier riding, tire economy* and *maximum road clearance.*

The "American Underslung" frame permits the direct and practical introduction of all these distinct and exclusive advantages.

The "Traveler" is priced at $4500, and comes fully equipped. All of this equipment is listed above. The accessories and the very finest we can procure.

The "Traveler" production is necessarily limited, due to the time demanded by each perfected chassis. Individuals or dealers should wire us at once for fall reservations.

American Motors Company, Dept. E, Indianapolis, Ind.

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PREST-O-LITE
The Light Universal

Remember This, Whenever You Exchange Your Empty

Prest-O-Lite Gas Tank

If you saw someone trying to steal your Prest-O-Lite Tank, you'd interfere, wouldn't you?

Well, any one who takes off your genuine Prest-O-Lite Tank, and slips on a counterfeit in exchange for it, is taking your property while your back is turned.

Your Prest-O-Lite Tank is in use and demand everywhere and can be exchanged, when empty, ANYWHERE and ALWAYS.

An imitation tank can be exchanged in mighty few places, and therefore has only a very limited value.

Any tank that has poor exchange service, some day may have none at all.

Dozens of imitators of Prest-O-Lite have gone out of business, leaving a trail of tanks that could neither be sold nor re-filled.

So it behooves you to watch, when you turn in your empty tank, and see that you get a genuine Prest-O-Lite Tank in return for it.

And another thing—we cannot assume responsibility for short measure or poor gas in tanks not filled by us. Protect yourself by looking for our label.

The Prest-O-Lite Co. 287 East South St. Indianapolis, Indiana

Branch offices and Service Stations in all principal cities. Charging Plants in all parts of the country. Extensive foreign service.

EXCHANGE AGENCIES EVERYWHERE



Another Feature That Contributes to the *Permanent* Accuracy of the

CORBIN-BROWN SPEEDOMETER

"the speedometer of *permanent* accuracy"

It is an unquestioned fact that the construction of the flexible shafting is responsible for much of the inaccuracy and unreliability of speedometers in general.

Too much friction in the casing results—or friction is minimized at the cost of durability.

The Corbin-Brown flexible shafting overcomes these faults.

It consists of a succession of eye-links and solid links, as shown in the illustration.

The solid link gives a smooth bearing, thus minimizing friction and insuring smooth running.

The strength of these links makes breaking almost impossible. However, if perchance one should break, the replacing with a new link is so simple a matter that anyone can do it.

Write today for Catalog

CORBIN SCREW CORPORATION DIVISION

(The American Hardware Corporation)

213 High Street **NEW BRITAIN, CONN.**

Distributors: **New York, Philadelphia, Chicago**

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HILO DE LUXE BURNER

The Largest Automobile Supply House in America

15—STORES—15

This is a Turn-Down Burner, i. e., you can reduce the size of the flame without carbonizing the burner.

The Greatest Gas Economizer and the Longest Lived Burner made.

Throw away your old-style burners and send us 80 cents for a pair of these.

Price 40 cents each, packed in individual boxes.

DO YOU WANT A COPY OF OUR 1912 CATALOG NO. 22?

The Most Complete of the Kind. **Mailed Free on Request.**

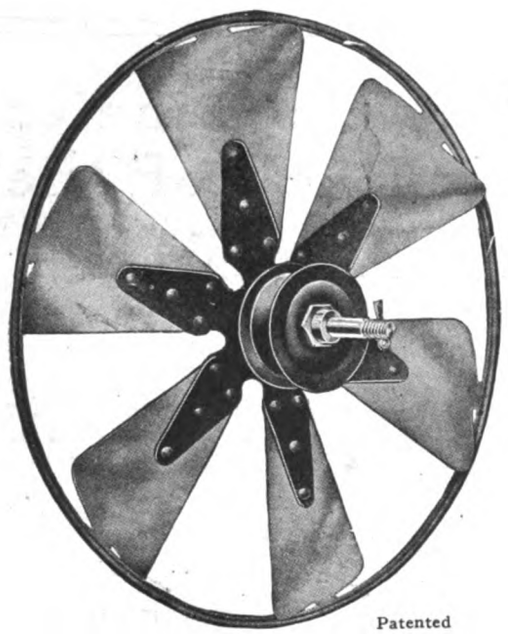
CHAS. E. MILLER

Home Office: 97-99-101-103 Reade St., New York City

MANUFACTURER, JOBBER, EXPORTER AND IMPORTER

Order From Nearest Branch, Address Chas. E. Miller.

NEW YORK CITY—97-103 Reade Street.
NEW YORK CITY—924 Eighth Avenue.
NEW YORK CITY—2782 Broadway.
BROOKLYN, N. Y.—1421 Bedford Avenue.
BUFFALO, N. Y.—824 Main Street.
ALBANY, N. Y.—135 Central Avenue.
CLEVELAND, OHIO—1829 Euclid Avenue.
BOSTON, MASS.—202-204 Columbus Ave.
HARTFORD, CONN.—274 Trumbull Street.
DETROIT, MICH.—227-229 Jefferson Ave.
ATLANTA, GA.—66 Edgewood Avenue.
PHILADELPHIA, PA.—318 North Broad St.
NEW ORLEANS, LA.—601-603 Baronne St.
NEWARK, N. J.—274 Halsey Street.
SPRINGFIELD, MASS.—Bridge and Dwight Sts.



Patented

More Air

With Sparks-Withington Fans, the pulling efficiency of our various sizes is exactly determined in our laboratory. This information is tabulated and gladly furnished to those interested. You know what each fan will do before you buy.

We Make 1,000 Fans Daily

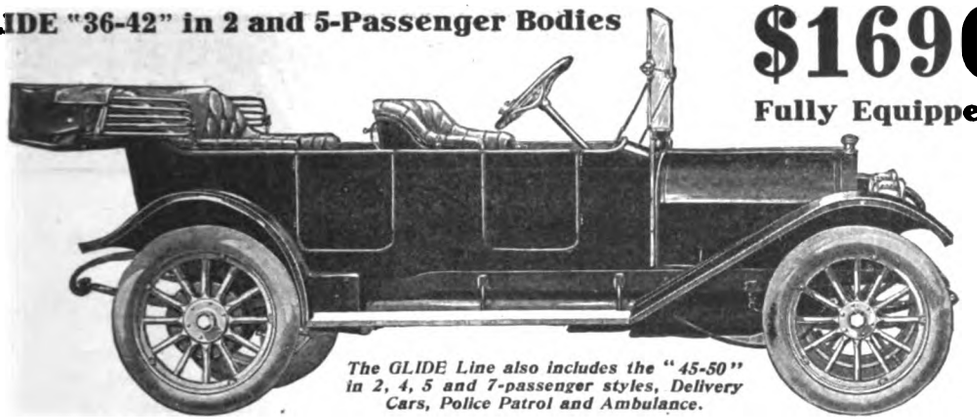
DELIVERIES ASSURED

Branch Factory
Walkerville, Canada

Sparks-Withington Co.
Jackson - - Michigan

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GLIDE "36-42" in 2 and 5-Passenger Bodies



The GLIDE Line also includes the "45-50" in 2, 4, 5 and 7-passenger styles, Delivery Cars, Police Patrol and Ambulance.

$1690
Fully Equipped

The *Popular* QUALITY Car

THE GLIDE "36-42" is strictly a QUALITY car—only the best known quality of materials has been used.

The GLIDE is a pleasure car—not a worry wagon. The great strength, simplicity and accessibility of all its working parts enable you to leave your worries behind.

Latest Equipment

The new Motor-Driven Tire Pump saves your strength, your time, your temper. Also saves your tires by keeping them fully inflated.

The Electric Lighting System is another of the GLIDE'S high-class features. Simply touch a button.

Electric Bull's Eye Side Lamps are sunk in dash, adding to the GLIDE'S appearance, eliminating all rattling and minimizing chances for breakage.

The GLIDE Self-Starter is sure of a spark, regardless of whether the points of the magneto are together or not.

Center Control, Left Side Drive, Floating Rear Axle with Pressed Steel Housing, Baker Bolted-on Demountable Rims, Goodyear No-Rim-Cut Tires are all found in the 1913 GLIDE "36-42."

The GLIDE Price

enables you to own a highest-class, top-quality car without paying enormous and unreasonable profits.

No other car gives you the up-to-date, efficient, luxurious GLIDE equipment, together with GLIDE structural quality and GLIDE service—at anywhere near the GLIDE price.

Write NOW for detailed descriptive circular.

Dealers

A GLIDE agency will be worth thousands of dollars to you. Open territory can be obtained NOW upon very attractive terms. Don't let this exceptional opportunity slip through your fingers. If you do, you'll regret it. Write us TODAY.

GLIDE "36-42" FEATURES

- Automatic Dynamo Lighting System
- Motor-Driven Tire Pump
- Unit Power Plant
- Long Stroke Motor with *Enclosed Valves*
- Center Control
- Left Side Drive
- Electric Side Lamps in Dash
- Electric Headlights and Tail Lamp
- An *Efficient* Self-Starter
- Floating Rear Axle with Pressed Steel Housing
- 118-inch Wheel Base
- Demountable Rims (Baker bolted-on)
- Goodyear No-Rim-Cut Tires

Glide

THE BARTHOLOMEW CO., 220 Glide Street, Peoria, Illinois





Kelly - Springfield Tire Company
20 Vesey St.
New York

Branch Offices in
New York
Chicago
Philadelphia
Boston
St. Louis
Detroit
Cincinnati
San Francisco
Los Angeles
Cleveland
Baltimore
Washington
Seattle
Atlanta
Akron, O.
Buffalo

Boss Rubber Co. Denver, Colo.
Appel & Burwell Rubber & Tire Co. Dallas, Texas
Todd Rubber Company New Haven, Conn.
Bering Tire & Rubber Co. Houston, Texas
The Hearn Tire & Rubber Co. Columbus, O.

Kelly-Springfield
Automobile Tires

As a matter of fact, dependable tires are the basis of real automobile usefulness.

Kelly-Springfield road mileage is a few thousand miles higher than the average. That reduces the cost of the tire.

The easy resiliency of Kelly-Springfield Tires is one phase of our argument. But staunchness and durability, born of the best rubber composition, skill and the incentive to make good tires better, offer a reason even more convincing—wear.

When you buy Kelly-Springfield Tires you are not experimenting. We have done that for you.

Kelly-Springfield Tire Company, 20 Vesey Street, New York

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All Tire Manufacturers will only guarantee their produce when filled with air at the recommended pressure.

GET A 1912

Twitchell

POSITIVE LOCK STOP

Air Gauge

With it you can get more mileage out of the Tires, because you can always keep them at right pressure.

The Twitchell Gauge is Tire Insurance for a dollar—Order one from your dealer or from us direct.

THE TWITCHELL GAUGE CO.
1256 Michigan Ave. CHICAGO, ILL.

Niagara

We Back Our Dealers to the Last Ditch

We know that the Niagara Self Starter will hold up and make friends for the men who sell it.

That's why we do not hesitate to guarantee every single starter without any qualification.

The Niagara Self Starter mixes the right proportion of gas and air in the cylinders of the engine.

That's why it always starts the engine—that's why it does not foul the engine.

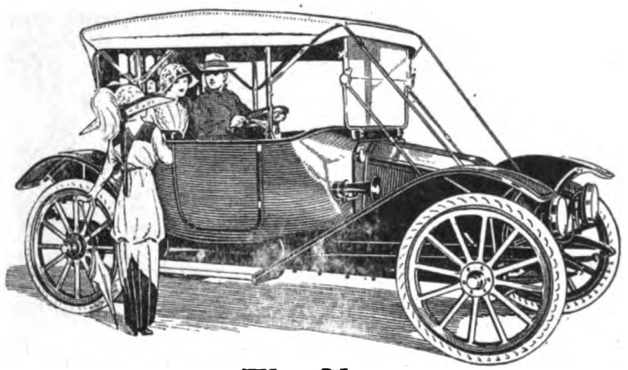
The compressor in the Niagara Self Starter is made of seamless drawn steel tubing with a cast iron piston and two cast iron piston rings—the Niagara Self Starter will never wear out.

We still have some good open territory in which good money can be made.

If you are the right dealer, write us.

NIAGARA SALES COMPANY, Buffalo, N. Y.

Self Starter



The New

Argo Electric

Roadster

Has Met with Instant Success

The Argo Roadster is a distinct departure from the old type of awkward, top-heavy electric. It has a long wheel base—low-hung construction—Interlocking foot control—non-reversible wheel steering apparatus—large artillery wheels—bevel gear drive and many other new improvements.

It has all the speed and all the mileage that you are ever likely to need—combined with the safety and convenience of an electric. Noiseless—clean—safe and economical to maintain.

Write For Our Catalog which gives complete description and specifications of the Argo Roadster, Brougham, etc.

Argo Electric Vehicle Co. Factories, Saginaw, Mich.

Metzger-Herrington Co., Distributors
2412-14 Michigan Ave. Chicago, Ill.

Cleveland, Ohio.

Mr. Auto Driver or Owner:

***Ever realize** how vitally important **Good Oil** is to your car?*

*You may have the best Automobile and equipment, but nothing is so **necessary as perfect lubrication.***

***Never** use any but the **best** Oil. You probably now use our*

"Euclid" Auto Cylinder Oil

*If not, you hardly know **real** satisfaction in driving your car.*

Be sure to ask for it next time. Sold by most of the large dealers.

If you cannot get it ask for sample or better still send us an order.

Freight paid on 10 gallons and up. Satisfaction guaranteed.

Yours truly,

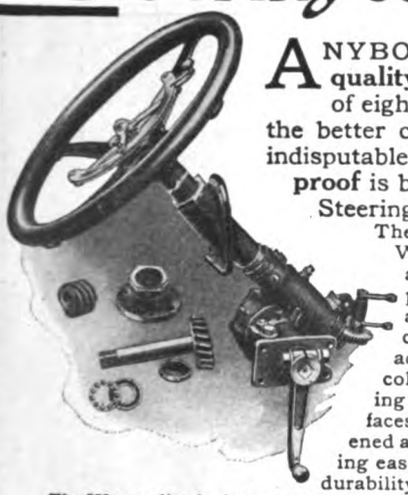
The Reliance Oil & Grease Co.

Established 1888

Agents Wanted for Exclusive Territory

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Warner Quality
Steering Gears



ANYBODY can claim quality—but a record of eight years use on the better class of cars is indisputable proof. That proof is back of Warner Steering Gears.

The prime features of Warner Gears are: accessibility; complete interchangeability; use of eccentric sleeves; adjustable angle of column; large bearing and contact surfaces specially hardened and ground, assuring ease of motion and durability.

The Warner line includes a wide range in both pleasure and commercial types.

We guarantee dependable deliveries.

Get acquainted with Warner Quality—make it another selling argument.

We modify our designs to meet your detail requirements, or build on approved designs on seasons quantity specifications.

Detroit Office
628 Ford Building

Philadelphia Office
Glenwood Ave. & 2nd St.

Warner Gear Co.
Muncie Indiana

BENZ

Since the introduction of BENZ cars to the motoring public of America no car has attained such world-wide supremacy as to its construction, standing up quality, and material. The new type of 35 and 50 H. P. BENZ models are the last word in automobile construction.

The noticeable features of this type of BENZ cars include the offset crank shaft, smokeless oiler, and SILENT CHAINS instead of timing gears.

The BENZ Carrosseries are noted for their beautiful lines and thorough comfort.

To those desiring AGENCY of this car the Benz Company will offer special terms. We want RELIABLE, ENERGETIC agents to further our interests for both BENZ pleasure cars and BENZ-GAGGENAU trucks, which today stand recognized by those who know, as the leading 6-ton truck. Wire or write us, no matter where you are.

Our PRICES compete with LEADING AMERICAN makes.

BENZ AUTO IMPORT COMPANY OF AMERICA
250 West 54th Street New York, N. Y.
Direct Branch of Benz & Cie., Mannheim, Germany.

Remy Magneto

Exchange Your Old Magneto for a New Remy

IT will cost you practically no more than what you will be forced to pay out for constant repairs on your present ignition system. A new Remy will give your car new life. Here is our exchange proposition:

	List Price	Allowance	Net to You
2-Cylinder Remy Magneto with Coil, complete.....	$46 00	$ 9 20	$36 80
4-Cylinder Remy Magneto with Coil, complete.....	50 00	10 00	40 00
6-Cylinder Remy Magneto with Coil, complete.....	52 00	10 40	41 60

Allowance made for any make of Magneto.

Remy Electric Company
Anderson, Indiana

BRANCHES—New York, Boston, Detroit, Chicago, Kansas City, San Francisco, Indianapolis.

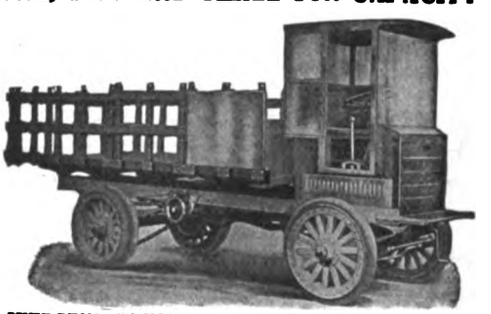
SERVICE STATIONS—Albuquerque, Augusta, Baltimore, Charlotte, Cincinnati, Cleveland, Denver, Dallas, El Paso, Houston, Jacksonville, Louisville, Memphis, Minneapolis, New Orleans, Nashville, Norfolk (Va.), Omaha, Los Angeles, Philadelphia, Pittsburgh, Portland (Me.), Portland (Ore.), Rochester, San Antonio, Seattle, Spokane, St. Louis, Syracuse, Utica, Washington (D. C.)

CANADA—Toronto, Winnipeg, Calgary, Hamilton, Vancouver, Montreal.

Lauth-Juergens

Lauth-Juergens Trucks are Delivery Insurance

QUALITY DURABILITY
ONE, TWO AND THREE TON CAPACITY



LAUTH-JUERGENS TRUCKS ARE THE LATEST IN CONSTRUCTION, most powerful in operation and the motors are guaranteed against defective workmanship and material for the life of the truck. They are positively the highest class trucks made. Two cylinder, one-ton, four cylinder, one, two and three-ton. Four speeds forward, Hess-Bright ball bearing transmission made in our own shops of the finest tool steel, three-piece disc clutch, covered by patents owned by us. Send for 1912 Catalog and specifications. Prompt delivery on all models. Large publicity campaign just begun. Our quality will do the rest.

Reliable Agents: Secure Your Territory for 1912 at Once.

The Lauth-Juergens Motor Car Co., Fremont, Ohio.

Branches and Agencies

BOSTON—David Abrams, 131 Portland St.
NEW YORK—West Side Garage & Motor Co., 160-162 101st St.
CHICAGO—The Lauth-Juergens Motor Car Co., 2630-32 Wabash Ave.
NEWARK, N. J.—Merchants Motor Car Co., Essex Building.
DETROIT, MICH.—Bierl Auto Truck Sales Agency, 453 Dix Ave.
DISTRICT OF COLUMBIA AND VICINITY—Bowles Motor Sales Co., Inc., 1008 14th St. N. W., Washington, D. C.

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AJAX TIRES

(Guaranteed 5,000 Miles)

Economy—Efficiency—Uniformity

Ajax Tires have many features all their own. Correct in design and accurate in every detail of construction—they are scientifically RIGHT.

If you are interested in getting the maximum mileage out of your tires, our 5,000 mile guarantee should convince you that Ajax Tires are built to last.

DEALERS:—Ajax Tires will help you in establishing a good trade. They have become the fastest selling tires on the market. Wide awake dealers from Maine to California have proven Ajax Tires business producers. You will be interested in our proposition.

AJAX-GRIEB RUBBER CO.

General Offices: 1796 Broadway, New York City
Factories: Trenton, N. J.

Branches in Principal Cities

STUTZ

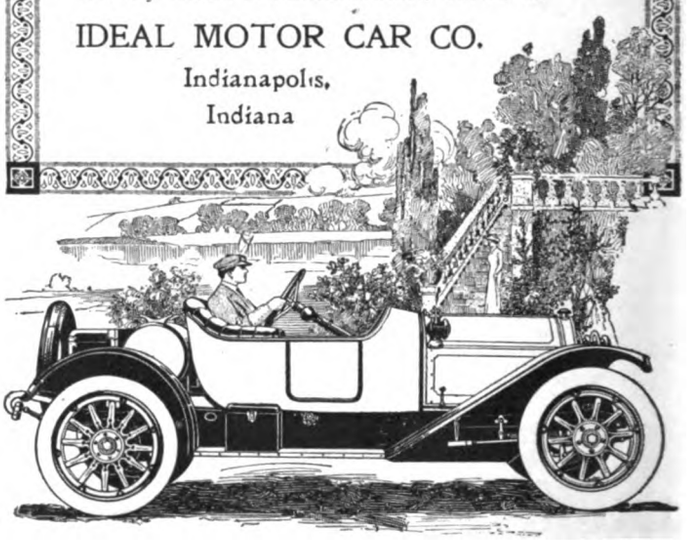
The Stutz Can Come Back
NO MATTER HOW LONG THE TRIP

The STUTZ is the original "value received," no-worry car.

No STUTZ has ever been taxed to the utmost, because its makers put such a reserved strength in its construction that road conditions never embarrass it.

Write today for advance Booklet A-15 Sturdy Stutz Announcement, Series B.

IDEAL MOTOR CAR CO.
Indianapolis,
Indiana



INTERLOCK INNER TIRES
Stop Tire Troubles

INVESTIGATE AND LEARN WHY SO MANY THOUSANDS OF MOTORISTS ARE DISCARDING INNER SHOES, RELINERS, FILLERS, AND OTHER MAKESHIFTS FOR INTERLOCK INNER TIRES—AND WHY INTERLOCKS ARE HANDLED AND RECOMMENDED BY THE BEST SUPPLY DEALERS AND TIRE HOUSES ALL OVER THE COUNTRY.

One weak point of the automobile to-day is that you can't depend on its tires. INTERLOCKS revolutionize this condition by making your tires so strong that blowouts become practically impossible. INTERLOCKS save half your tire expense—save repair bills—double your mileage—prevent punctures and completely free you from all fear of tire trouble.

What INTERLOCKS Are.—The INTERLOCK is a complete inner tire (not an inner shoe) which is placed between the outer casing and the inner tube to strengthen the outer casing and protect the tube. It is the only reinforcement which is locked by air pressure to the rim and which becomes an integral part of the tires, and, therefore, cannot heat or chafe. Even if the tire is broken the INTERLOCK will hold.

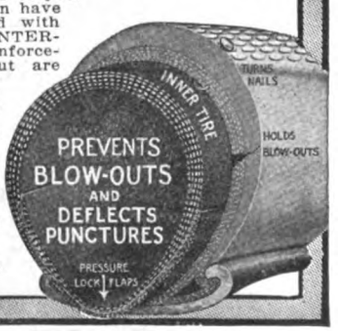
INTERLOCKS Insure Safety.—You know that the sudden blowing out of a tire may easily ditch any car when going at fair speed—the safety of INTERLOCKS should appeal to you.

Reduce Your Tire Expense.—You can have the tires on your new car equipped with INTERLOCKS if you specify them. INTERLOCKS are the only perfect tire reinforcement. They cost a little more but are cheapest in the long run.

For your present car—ask any dealer or supply house, or write to us for the name of your nearest supply source. INTERLOCKS will make any fairly sound tire more than carry you through the season. They are easily placed and are made in all sizes.

We Want Dealers Everywhere.—Write for Special 30 Day Offer, Booklets, Prices, Records of Road Tests and Testimonials of users.

DOUBLE FABRIC TIRE CO.
600 W. 9th St. Auburn, Ind.





Model K2
Price $75

Warner AUTO-METER

WE have three times trebled our factories. More than 100,000 new cars will be equipped with Warner Auto-Meters this season. Practically all of the prominent manufacturers make the Warner Auto-Meter "regular equipment"—regardless of its HIGH PRICE.

Prices from $50 to $145. For sale by dealers all over the world and at our own branches.

Handsome catalogue on request.

The Warner Instrument Company
Beloit, Wisconsin

BRANCHES—Atlanta, Denver, Philadelphia, Boston, Detroit, Buffalo, Indianapolis, Portland (Ore.), Chicago, Kansas City, Cincinnati, Los Angeles, Seattle, Cleveland, New York, Pittsburgh, San Francisco, St. Louis.

Canadian Branch: 559 Yonge St., Toronto, Ont.

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To Manufacturers of Motor Cars:

Have you considered the important advantages of using the American made New Departure ball bearings in your new models?

It is a significant fact that most manufacturers of motor cars have done so and after testing them out, have contracted with us for their requirements.

Take a short cut to a quick discussion of your bearing problems by sending us your blue prints and data. You will receive by return mail our catalogue-treatise, written by our staff of engineers. This will be followed quickly by a letter from our chief engineer frankly stating the result of his study of your bearing requirements, with a view to securing maximum efficiency at minimum installation and maintenance cost.

Write today. It will save your time and expensive experimenting.

THE NEW DEPARTURE MANUFACTURING COMPANY, Bristol, Conn.

WESTERN BRANCH: 1016-17 Ford Building, Detroit

The Hotel of Comfort

The WOODSTOCK

"You can walk from there to anywhere"

Our new addition is ready for occupancy.
We now have 360 rooms with 265 baths.
Write us for descriptive folder with typical floor plan and rate card.
Wire for reservation at our expense.



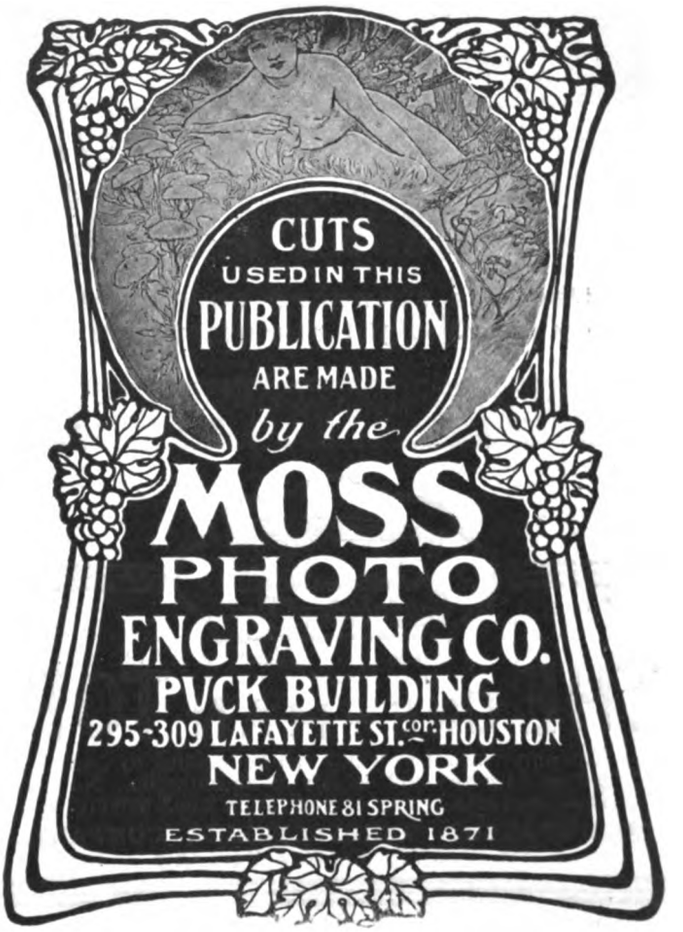
RATES

Court room with bath, for one, per day.....$2.50
Court room with bath, for two, per day..... 3.50
Outside room with bath for one, per day..... 3.00
Outside room with bath, for two, per day..... 4.00
Outside room with twin beds, for two, per day $4.00

HOTEL WOODSTOCK
127 W. 43d St.
New York

W. H. Valiquette, Manager.

Also
"THE BERWICK"
Rutland, Vermont

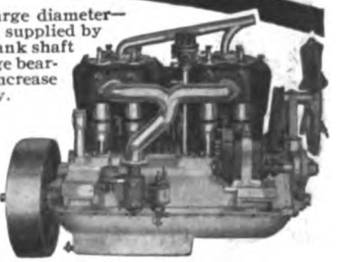


Diamond Tires

We could build them cheaper
But We Won't.
We would build them better
But We Can't.

THE DIAMOND RUBBER CO. OF N. Y., Akron, O.
Subsidiary of The B. F. Goodrich Co.

Crank shaft is of large diameter—self-contained oiling system supplied by a gear pump through the hollow crank shaft provides perfect oiling. Their extra large bearings reduce friction to a minimum—increase durability and efficiency.



Wisconsin
The Consistent Motors

ALL 4 CYCLE—5 TYPES
3 3-4 in. bore, 5 in. stroke, 4 cyl. 4 1-4 in. bore, 5 in. stroke, 4 cyl. 4 1-4 in. bore, 5 in. stroke, 6 cyl.
4 3-4 in. bore, 5 1-2 in. stroke, 4 cyl. 5 1-4 in. bore, 7 in. stroke, 4 cyl.

WISCONSIN MOTOR MANUFACTURING COMPANY
Dept. 32, Milwaukee

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THE LONG HORN

The One Mechanical, Never Failing Warning Device

Costs Little to Buy—Costs Nothing to Operate

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This name stands for efficiency in

SPARK PLUGS

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Lights, dims and extinguishes all gas lamps on the car through a simple turn of the hand. Coupled to valve-stem of acetylene tank. Direct control. Always within easy reach.

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Every car owner in your vicinity, Mr. Dealer, will be interested—it's up to you to show them—and sell them. Write for booklet and dealer discounts.

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Sole Licensed Manufacturers for the United States

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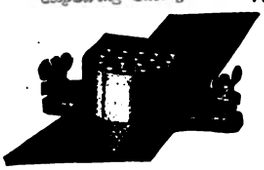
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TIRE CUTS ruin casings. They admit moisture to the carcass, cause the fabric to rot and weaken, grow larger-end in blowouts.

You can repair **CASINGS** and **INNER TUBES** anywhere in 15 minutes, better than a Repair Shop can do—and for *one cent*.

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Patented

A practical vulcanizing outfit complete, with enough repair gum to make 40 patches. It weighs 3 pounds and can be carried in the tool box. **Simplest and most satisfactory device for eliminating tire troubles that has ever been devised.**

Absolutely automatic. Place the patch—attach the Vulcanizer—put in the gasoline light it. No further attention required. In 15 minutes the job is done.

It *can't burn, scorch* or *injure* tube or casing. It *can't* get out of order. It *can't* fail to do its work. So simple, anyone can operate it. The Universal Auto-Vulcanizer saves its cost a *hundred times* over in trouble and expense.

Price Complete, **$4.00** Ready for Instant Use

Guaranteed Satisfactory or Money Refunded

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are the least likely to require changing, and afford the best means of tire changing when required.

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Standard Universal Rims



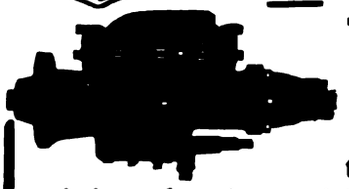
fit any style or make of tires. The side rings are reversible, they curve outward on one side to fit a straight side tire, inward on the other to accommodate a clincher. Two turns of a nut unlocks the rim for demounting, two more turns locks the rim in place. Write for catalog 607, which explains fully.



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Touring Car and Roadster Types. 44 h.p. 6 Cylinders. Unit Power Plant, 3-Point Suspension. 122 in. Wheel-Base. 36 x 4 Tires.

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HAVERS "Six-55" $2250
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$1,675	$2,150	$2,750

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MARMON
"The Easiest Riding Car In The World"

The Marmon "32"
32-40 H.P., 120-inch wheelbase, self starting, dynamo lighting, with body types to meet every requirement and corresponding equipment —$2,850 to $4,100

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Hills No Terror
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Fully Equipped.

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Speedwell Motor Cars

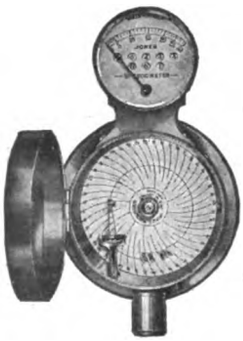
New Series "F," 4 Cylinders, 4 and 5 Passenger Models..... $2700

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All models electrically lighted and fully equipped.

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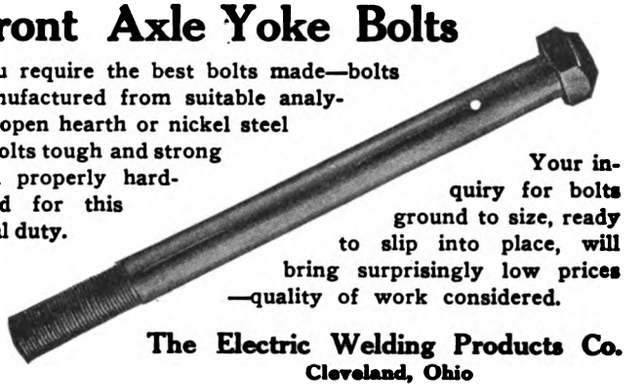
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Your inquiry for bolts ground to size, ready to slip into place, will bring surprisingly low prices—quality of work considered.

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TOLEDO, OHIO



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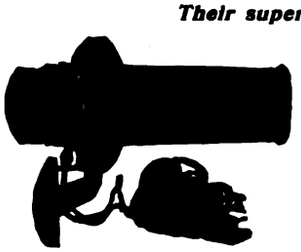
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Largest Exclusive Spark Plug Manufacturers in the World

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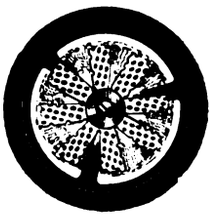
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Motorists who use Republic Staggard Tread Tires will tell you that they—

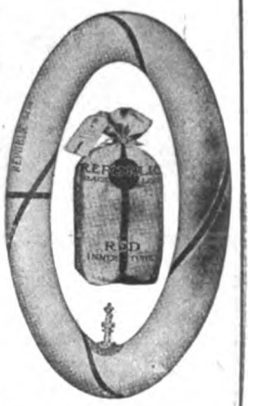
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Give double mileage because of the full-thickness tread under the studs.

Most Widely Imitated of All

We guarantee the Republic Black-Line Red Inner Tube to be as nearly perfect as a tube can be made—and is a fitting companion for the splendid Republic Staggard Tread.

The Best Tube Made



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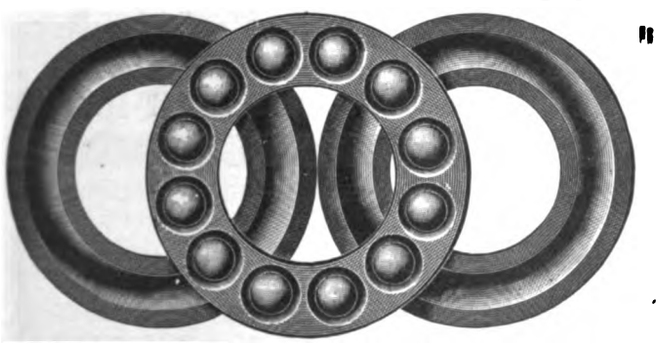
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THE COLONIAL
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DEALERS—Wire now for territory which is choice but going fast.
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2, 3 and 5-Ton Models
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We want you to write for the Solar Catalog before you decide on your motor lamps, for this is the most complete line of lamps on the market. Solar Lamps have been preferred by most motorists for the past fourteen years because of their brilliancy, their style, their strength and their several exclusive advantages—their special short focus lead glass lens mirror reflectors—the patented double ray light projection (in the Solarclipse), giving two distinct fields of light, for city and country use—the new black finish, the only such finish that's proof against heat and moisture—and other features that other lamps lack.
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Drop Hammer Forgings
cost very little more than castings. They are vastly superior and less expensive in the end.
WE ARE SPECIALISTS
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from special analysis steel.
Send prints of parts you will need in
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THE CONSOLIDATED MANUFACTURING COMPANY, Toledo, Ohio

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Occupying the newest and most modern automobile manufacturing plant in America.
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No Cranking! No Pumping!
START YOUR CAR FROM THE SEAT
ALWAYS READY AND POSITIVE
The AMERICAN STARTER is the Only Starter on the market that measures the amount of gas injected into the cylinders. You cannot "dope" the engine with the AMERICAN STARTER.
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SOLD EVERYWHERE
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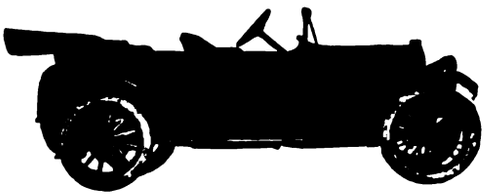
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Model 37-A

$1475



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Cole Sixty six cylinder Touring Car, five passenger convertible to seven passenger, 132-inch wheel base, Delco electric lighting, starting and ignition. $2485

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WRITE TODAY for Cole Blue Book and dealer's proposition.

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The Kentucky Thoroughbred "AMES 45"

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The Car Complete F. O. B. Detroit

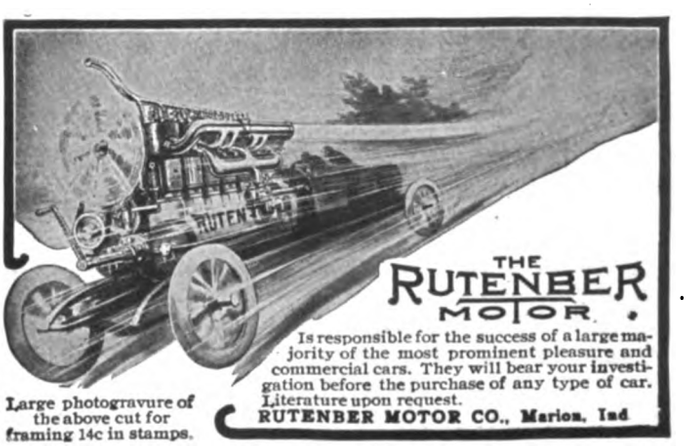
Five-Passenger Touring Car

THE CAR—The best materials, the highest-grade workmanship, and the most up-to-date ideas in construction

EQUIPMENT—The most complete, highest-grade equipment ever placed on a popular-priced car.

Two Passenger Roadster, 110" wheelbase, $900, f. o. b. Detroit
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R-C-H CORPORATION, 104 Lycaste St, Detroit, Mich.

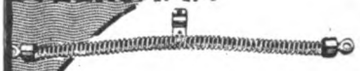


Large photogravure of the above cut for framing 14c in stamps.

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To Smooth Rough Roads

THE LITTLE STEERSMAN



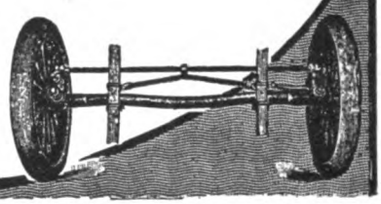
The one device most needed by the man who wants to make steering a pleasure instead of a labor.

Removes all nervous strain—takes physical strain from steering operation—holds machine steady—prevents accidents in case steering gear breaks or tire bursts.

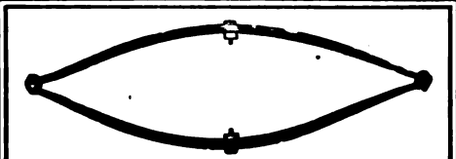
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Let us tell you more about it. The story is worth knowing.

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ARE THE BEST
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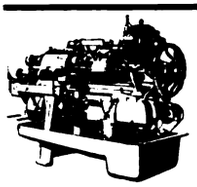


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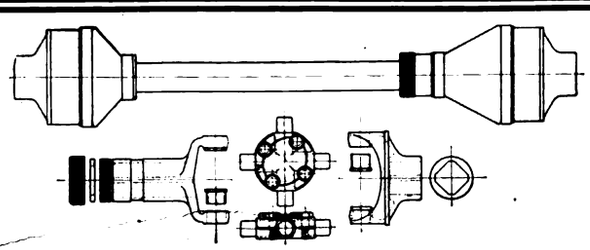
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Preserves Tire Life by Preventing Tire Decay

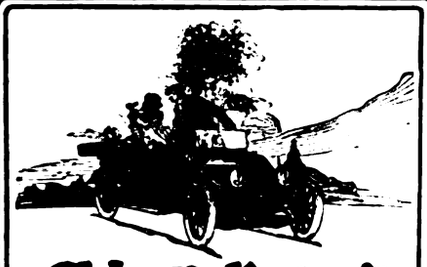
NATIONAL RUBBER CO. Narco Product ST. LOUIS, U.S.A. **TIRENEW** NATIONAL RUBBER CO. Narco Product ST. LOUIS, U.S.A.

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MODELS AND PRICES

30-40	Fore-door Roadster, 116-inch wheel base	$1700
34-40	5-passenger, Fore-Door Touring Car 116-inch wheel base	$1700
44-50	5-passenger, Fore-Door Demi-Tonneau 121-inch wheel base	$1975
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"Built for Permanence" "Guaranteed for Life"



These Tires for You

Four corps of experts working in four of the best equipped tire plants in the world are operating as a unit to produce.

UNITED STATES TIRES

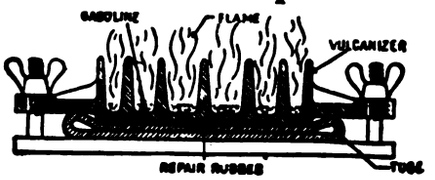
Nothing of the kind has ever before been attempted in automobile tire manufacturing.

United States Tire Company
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The Inner Tube—Repair It Yourself

On the road, or at home—anywhere with

The Imperial Vulcanizer Repair Kit



Nickel Plated Patent Pending

One ounce of gasoline and a little rubber gives you practically a new inner tube in 15 minutes.

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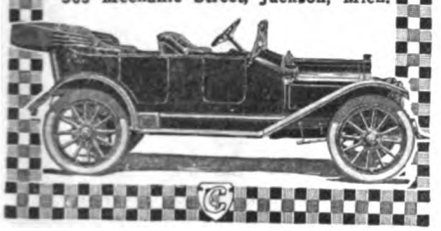
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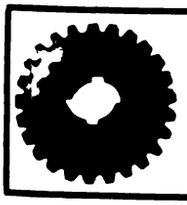
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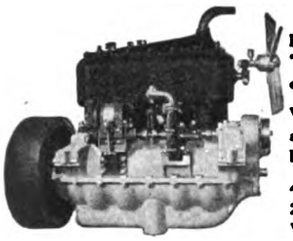
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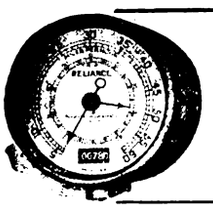
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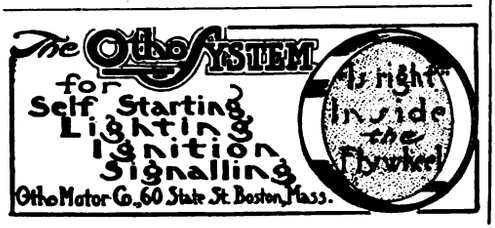




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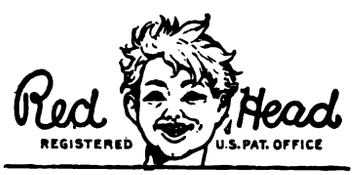
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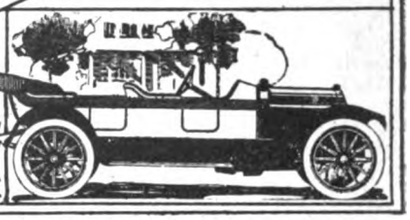
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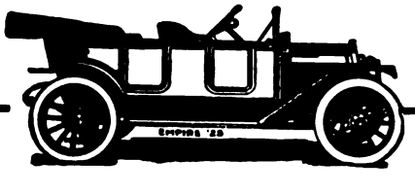
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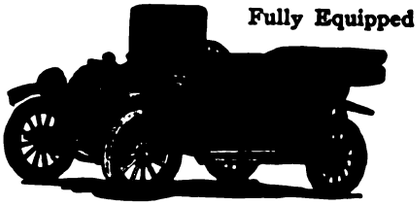
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makes a new lining out of a dirty, faded and stained inside. Will not fade or wash off. Leaves the cloth soft and pliable.
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As a part of the selling contract I will guarantee that the Buffalo Electric Vehicle Co. will carry repair parts in stock for all of these models.

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Makes leather, rubber and pantasote tops aud curtains look like new. A safe, durable renovator that leaves the cloth soft and pliable.
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Waterproofs mohair and duck automobile tops and curtains. Makes faded and stained tops look like new. Leaves the cloth soft and pliable. Dries over night.
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Our new fore door five passenger bodies completely finished, $52.50. New Mohair Tops at $13.50.
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A renovator for leather seats and cushions. Brightens the finish, softens the leather and does not crack or peel. Dries in 20 minutes.
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Detroit Self-Starter. Throw your. Crank away. Sold direct. No agents. $10.00.
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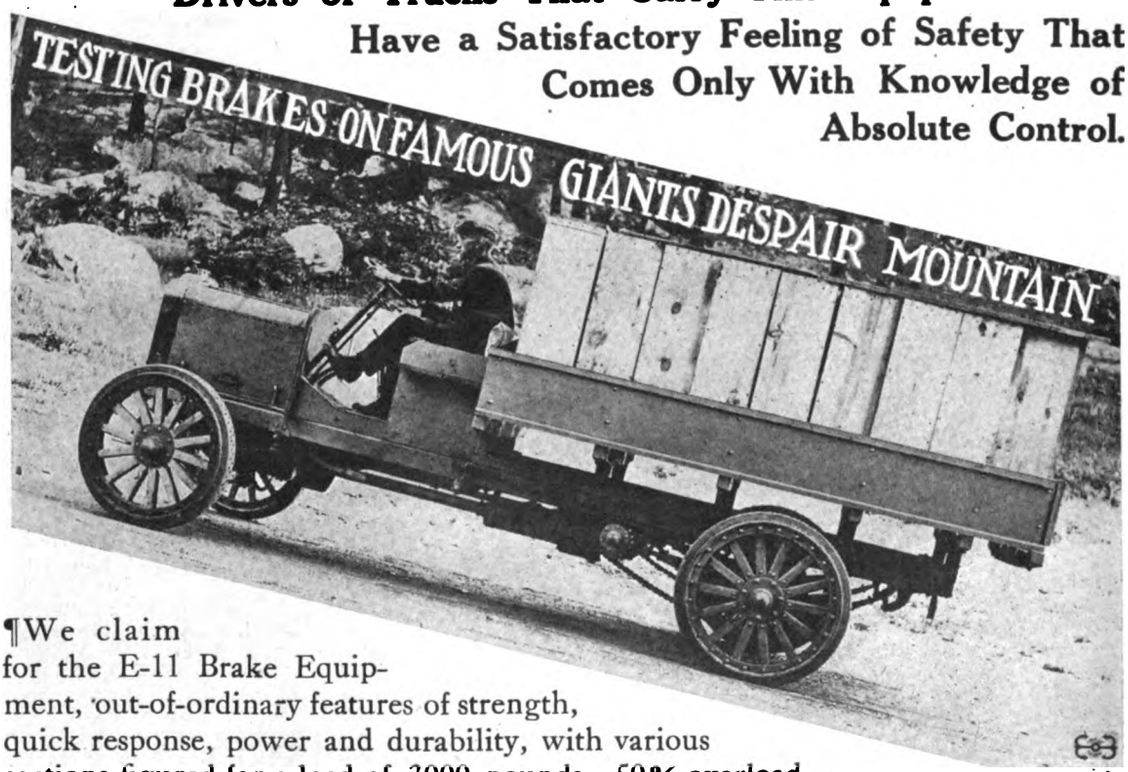
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Brake Equipment E-11

New Features Unusual Steel

Highest Braking Efficiency

Drivers of Trucks That Carry This Equipment
Have a Satisfactory Feeling of Safety That Comes Only With Knowledge of Absolute Control.



¶We claim for the E-11 Brake Equipment, out-of-ordinary features of strength, quick response, power and durability, with various sections figured for a load of 3000 pounds—50% overload—80% on the rear and skidding the rear wheels. ¶Fifty pounds pressure on the foot pedal will bring the truck to rest in the shortest possible braking distance. Material factor of safety 4 to 1. ¶Blue prints and specifications on request.

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"As to the Mercer, it can be said that considering its size it made the most wonderful showing ever displayed in a Vanderbilt Cup Race."— *The Automobile*, Oct. 3, 1912.

A 301 cubic inch Mercer car finished second in Vanderbilt Cup Race—299.5 miles—at Milwaukee, Wis., October 2, 1912, only 40 seconds behind winning Mercedes—a 600 cubic inch speed creation, conceded to be Europe's best.

An average speed of 69 miles an hour was maintained, over one of the roughest courses ever used for racing.

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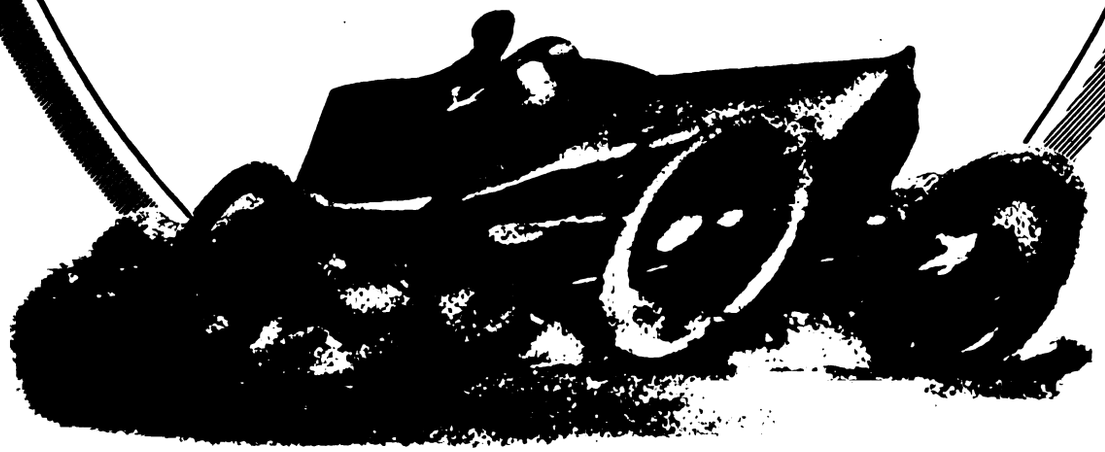
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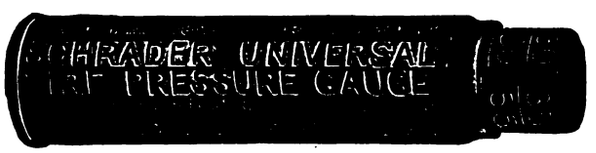
He insists that this is tire economy and

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How do you know what pressure you have in your tires? A

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UNIVERSAL
Tire Pressure Gauge

(Trade Mark Registered in U. S. Patent Office)



(Patented March, 1898—Other Patents Pending)

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28-32 Rose Street New York City

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1913 KLINE KAR

The Car of Quality

The Kline Kar roadster for Series A, 1913, is the classiest and best small car proposition made this season.

This car, mounted on 4-30, 4-40, 6-50 and 6-60 chassis, is the ideal automobile for all kinds of service. It is especially adapted to the needs of a physician.

The Honeymoon Car

Thus it is known in the factory, for the machine—a two-passenger type—fills all requirements for the wedding trip.

The big, roomy luggage compartment, shown in the photograph, will carry three large suitcases, hat box and other touring necessities.

The machine is THE easiest riding runabout or roadster sold. The upholstering and spring suspension are perfect.

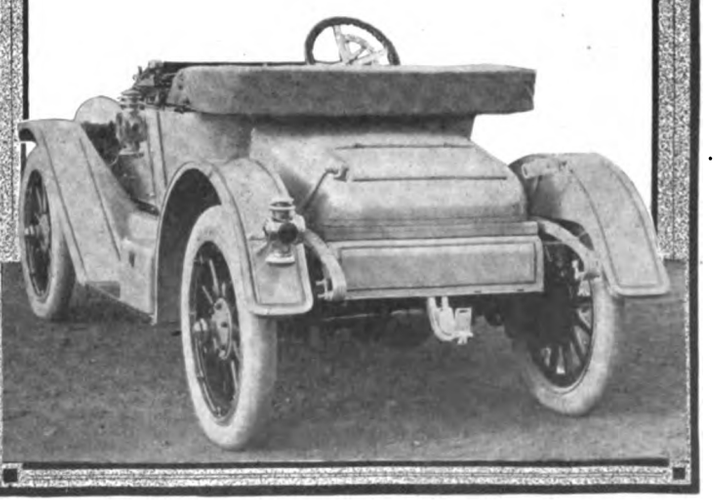
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4-30, $1,850 6-50, $2,850
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DYNAMO ELECTRIC LIGHT
AUTOMATIC MECHANICAL STARTER
DETACHABLE DEMOUNTABLE RIMS
FIVE SPEED TRANSMISSION
LUXURIOUS UPHOLSTERING
LOW CENTER OF GRAVITY

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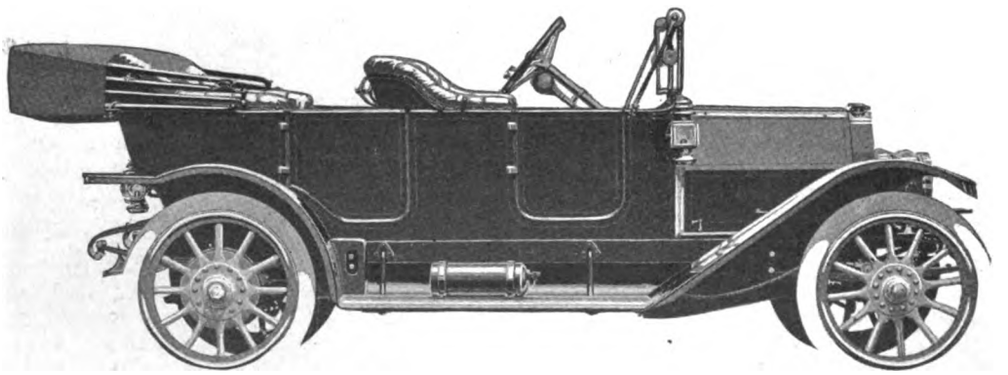
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30 Horsepower
5-Passenger Touring Car
110-Inch Wheel Base
Timken Bearings
Center Control
Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision Wind Shield
Prestolite Tank

¶ "Comparisons are odious," we have been taught to believe, but the automobile industry has upset this and other traditions heretofore accepted as gospel. "Comparisons furnish excellent proof of worth" might well be substituted, for everyone wants the most his money will buy and comparisons or actual demonstrations are the best known methods for finding what is best.

Write for our 1913 catalogue, today. Please address Dept. 50.

The Willys-Overland Company, Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, October 17, 1912 No. 4

PURCHASER FINALLY FOUND FOR ATLAS ENGINE WORKS

The Lyonses of Chicago Form $500,000 Company and Make Acceptable Bid for Property—Awaits Approval of Court.

After remaining in suspense for more than three months, the Atlas Engine Works of Indianapolis have been saved, and so soon as released by the receiver they will return to the manufacturer of gas engines, including the Knight and Diesel type. The "saviors" are James W., William P. and Geo. W. Lyons, all of whom are Chicagoans and the first two of whom were identified with the Atlas Engine Works some 15 or 20 years ago. It is understood that several wealthy men whose names will not appear are associated with the Lyonses in the venture.

When the property apparently was going begging they submitted a bid, and on Tuesday last Judge Weir in the Federal Court in Indianapolis ordered the plant sold, and there is small doubt that he will approve the tender made by the Lyons people. As evidence of the understanding that exists, the Lyonses already have incorporated the Lyons-Atlas Engine Works, which, capitalized at $500,000, has been incorporated under the laws of Indiana. James W. Lyons is its president, William P. Lyons its vice-president and George W. Lyons its secretary and treasurer.

Under the provisions of the bid, the new company will pay $441,000, the interest on the $1,050,000 worth of bonds, secured by a mortgage deed of trust held by the Indiana Trust Co.; also the sum of $105,000, a certain indebtedness secured by $150,000 worth of bonds; also $48,187.04, a debt which is secured by $63,000 worth of bills and accounts receivable, and $80,000 in cash. Two judgments against the Atlas Engine Works, aggregating $6,700, also will be paid.

The company will take over the real estate and buildings of the Atlas Engine Works subject to the mortgage deed of trust, but the personal property of the company must be sold free of any incumbrance.

Willys-Gramm Suit Amicably Settled.

The action instituted in August last by John N. Willys, president of the Willys-Overland Co., against A. L. White and W. T. Agerter, former president and treasurer, respectively, of the Gramm Motor Truck Co., of Lima, O., has been settled amicably. In his complaint, which proved something of a sensation, Willys charged that previous to his purchase of the Gramm company, in April last, White and Agerter had authorized the issue of 1,000 shares of stock to cover a fictitious indebtedness, and declared a stock dividend of $225,000 when the Gramm company really had no surplus capital, and otherwise practised fraud and misrepresentation, in view of which Willys asked the court to annul his contract of purchase. The amicable adjustment, it is understood, was brought about by a readjustment of values so satisfactory to Willys that the suit will be withdrawn.

Continental Cuts Luscious "Melon."

It required even less than half an eye to discern that the Continental Motor Mfg. Co., of Detroit and Muskegon, Mich., had enjoyed unbounded prosperity, but, despite the fact, trade-wise persons were unprepared for the declaration of the 200 per cent. stock dividend which was voted by the directors at the annual meeting of the company last week. At the same time, the capital of the company was increased from $500,000 to $2,400,000, of which $900,000 will be retained in the treasury to meet future necessities.

MAXI CARBURETTER BOUGHT BY WALL STREET BANKERS

Nevins and Dunn Purchase Controlling Interest from the McCoys—Factory Acquired in Newark and Already is Operating.

Because the manufacture of carburetters does not readily dovetail with the production of gas lighting fixtures and artistic bronze work, Edward A. McCoy and his intimates, who organized the Maxi Co. to manufacture the carburetter of that name, have disposed of a 75 per cent. interest in the company to Thomas A. Nevins and John W. Dunn, of New York City. The new owners already have acquired a factory in Newark, N. J., and are prosecuting the manufacture of the Maxi carburetter with such energy that it is probable that it will be ready for the market within 30 days.

The Maxi Co., capitalized at $200,000, was incorporated under New York laws in July last, the reputation of the McCoys in their original field of manufacture—that of gas lighting fixtures and bronze work—giving to the new enterprise immediate standing quite apart from that contributed by the originality of the carburetter itself.

Edward A. McCoy is president and treasurer of the company, but with the other officers will retire so soon as Messrs. Nevins and Dunn are ready to take office. It is probable that Nevins will assume the presidency and Dunn become secretary and treasurer. Both of these gentlemen are bankers, located at 41 Wall street, New York, and are men of means and large experience. Nevins is the head of the Hydrocarbon Convertor Co., which had to do with a kerosene carburetter, while Dunn is the former president of the International Steam Pump Co., an enterprise the magni-

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tude of which is aptly suggested by its title.

The carburetter will be produced under patent No. 1,038,040, issued September 10, 1912, to Arthur J. Weiss, West Orange, N. J., and assigned to the Maxi company. It is distinguished by an entire absence of springs and by the fact that, although there are no less than 14 fuel outlet passages, it requires absolutely no adjustment. The single butterfly throttle valve which is employed is so mounted that, as it opens, it successively opens 13 of the fuel jets; the 14th protrudes through the butterfly valve and is of peculiar design, so that through it both the air and the gasolene necessary for starting the motor or for operation at low speed are supplied.

To Produce New Type of Rim.

To exploit a new type of quick detachable, demountable rim patented by Robert W. Ashley, a New York patent attorney, the General Rim Co., capitalized at $150,000, has been incorporated under the laws of New York and will at once proceed to place the new product upon the market. The company will not equip factories and build its own products, but will have them manufactured in the plants of the Mott Wheel Works in Utica, N. Y., and Jackson, Mich. Offices of the company have been opened at Broadway and 64th street, New York.

In the company Ashley, who is not new in the field of invention, is vice-president and secretary. The president is Frank Oberkirch, of 47 West 34th street, New York City, who also is president of the St. Mary's Sewer Pipe Co., of St. Mary's, Elk county, Pa. The treasurer is William Kaul of St. Mary's, a manufacturer and broker who is identified with various enterprises.

Ashley's invention consists essentially of a floating split ring which lies within the rim of the wheel and which is attached at the ends to a simple locking device that works with a nut and bolt. The expansion of the ring forces it outward and into a slot in the rim bed, locking it tightly in place. Ashley states that removing a rim with this device is a matter of seconds only.

Yonkers Repairman Sued for Tire Bill.

Because of the alleged failure of Herman Flador, trading as the Yonkers (N. Y.) Auto Repair Co., to pay all of a bill of $1,645.02, the Shawmut Tire Co. of New York is prosecuting an action in the Supreme Court for New York county. The complaint is that between May 11 and August 7, 1911, Flador bought goods to the amount of $1,645.02 and paid but $1,046.46, leaving a balance of $598.56. The goods were sold by the Shawmut Tire Co., of Boston, but the account has been assigned to the Shawmut Tire Co. of New York, in which name the proceedings are brought.

REORGANIZE KELLY TRUCK AND TRIPLE PRODUCTION

Capital Increased $2,500,000 But Control Remains With Kellys—Air-Cooled Motor Is Dropped—Shanks Is Sales Manager.

In order to permit of enlargement, and to carry out more aggressive plans which have been mapped out, the Kelly Motor Truck Co., of Springfield, O., capitalized at $450,000, has been reorganized, under the laws of that state, under the style Kelly-Springfield Motor Truck Co. The new company is capitalized at $2,500,000, of which $1,000,000 is preferred stock and the remainder common.

In the reorganization and refinancing of the company, Emerson McMillin & Co., who are bankers and brokers in New York, have played a leading part and, who, as required by the laws of Ohio, have subscribed for at least 10 per cent. of the stock. The control of the company, however, will remain with E. S. Kelly, who is general manager, and J. S. Crowell, who is vice-president and secretary, and who will receive new stock in exchange for their holdings in the old company. Officers of the new company have not yet been elected, but the Kellys will remain in full charge.

It is the intention immediately so to enlarge the factory as to permit of tripled output and to abandon the air-cooled motor, which long has been a feature of the Kelly vehicles, and use instead a water-cooled engine.

Among other outgrowths of reorganization will be the appointment of Charles B. Shanks as sales manager of the Kelly-Springfield company, who is at present its western manager with headquarters in San Francisco. Early in November he will remove to the factory in Springfield to assume his new and larger duties.

Shanks was the original sales manager of the Winton Motor Carriage Co., of Cleveland, which implies that he is one of the veterans of the industry. After removal to the Pacific Coast he became interested in commercial vehicles, to which he since has devoted himself.

New Yorkers to Market the Gasosava.

The Gasosava Co., organized under New York laws with $50,000 capital stock, has taken over the "Gasometer" introduced several months since by the Lattig & Townsend Co. of Philadelphia. John J. Smart is president of the Gasosava Co., Eugene Cable treasurer and George T. Keen secretary; all of them are New York hotel men. The device is being manufactured in Torrington, Conn., but the Gasosava offices are in New York, at 1270 Broadway. In its simplest aspect, it is merely a fine brass screen the edges of which are bound in a copper gasket. The outer part of the circular area of the device is covered by a porous fabric wick calculated to operate on the principle of the wick in a carburetter. The contrivance is designed to be inserted between the carburetter and the intake manifold and its purpose is to ensure the homogeneity of the mixture and to save "gas," as the name suggests.

Atlas and "35%" Settle Their Suit.

Despite the fact that some of those who made contracts to exchange goods for advertising in a so-called monthly bulletin issued by the 35% Automobile Supply Co. of New York, and who later failed to carry out the terms of the contract, believing they had been duped, propose to fight to a finish in the courts, settlement was this week made in the action brought by the 35% concern against the Atlas Rubber Co. of Buffalo, in the Supreme Court for New York county. The complaint was that, in exchange for the advertising the Atlas company was to credit the "35 percenters" with $3,360 worth of goods but defaulted when $1,900 was still due. The Atlas company claimed it had transferred the contract to the J. Elwood Lee Co. and had no further interest in the matter. It is stated by the 35% representatives that the Lee company made the settlement.

Virginians Follow Sultan to New York.

Having obtained a judgment in Richmond, Va., against the Sultan Motor Co., of New York City, the Virginia Taxi Service Co. this week concluded an action in the Supreme Court for New York county and had the judgment with added interest and costs recorded in New York, thus obtaining jurisdiction over the motor company. The amount now is $21,163.39 and comprises a claim made by the Richmond concern that cabs furnished by the Sultan company were not according to contract and therefore caused considerable damage to the plaintiff's business. The judgment in Richmond was taken in July last.

N.A.A.M. to Hold Session in Detroit.

For the first time, the National Association of Automobile Manufacturers is to hold a meeting in the "automobile capital"—Detroit, Mich.—a general meeting of the organization having been fixed to occur in that city on the 13th, 14th and 15th of November. The session, however, will in no way interfere with the regular meeting of the executive committee, which will occur in New York, as usual, on the first Wednesday in the month.

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INVENTOR SALVINI'S HORN CAUSES STORM OF TROUBLE

Tries To Manufacture It, But Incorporation Mix-up Leads to Court—First Move Results in a Salvini Victory.

An electric horn, which is not yet patented, a proposed corporation which never incorporated and a corporation which did incorporate all figure prominently in an action which Mrs. Minnie Cohen of New York City, wife of a clothing manufacturer, has brought against the Salvini Electrical Horn Manufacturing Co., also of New York, in the Supreme Court for New York county. Mrs. Cohen, for various and divers reasons, asked that pending the litigation an injunction be issued restraining Salvatore Salvini and his company from manufacturing and selling the horn. Judge Greenbaum, however, made decision on a novel legal point and refused the injunction on the grounds that a three party contract, which has been signed by two only, is not binding between the two who have signed. Further action, however, is probable.

Salvini, who in the legal papers also is named as Salvatore Scognamillo, previous to conceiving the idea of the horn, had invented one or two things but claims to have lost out when it came to getting anything substantial through the promotion of the devices. When he invented the horn he sought friends upon whom he thought he could depend and asked capital wherewith to manufacture the horn, he having made application for a patent April 16 of the present year. Mrs. Cohen agreed to subscribe funds for floating the project and, according to her complaint, the articles of incorporation were drawn up the first week in September. Mrs. Cohen, Salvini, and Edwin Solomon, one of Cohen's salesmen, were to compose the company, but after she and Salvini had signed, she refused to go further or to put up any money until the proposed patent had been subjected to a search to give some idea of its validity and also to ascertain if infringement suits would be likely.

Mrs. Cohen claimed that instead of waiting for the conclusion of the search Salvini and Solomon, with Solomon's brother Godfrey, incorporated the Salvini Electrical Horn Manufacturing Co., began to fit up a factory on East 136th street, New York City, and prepared to manufacture. She laid claim to an interest in the invention because of the fact that she and Salvini had signed the original articles for the first proposed incorporation. On this basis she sought an injunction restraining Salvini and the company from manufacturing, which, as stated, Judge Greenbaum refused.

The horn is said to operate on the familiar plan of a cam device causing a succession of blows on a metal diaphragm, the moving parts being electrically operated. In appearance it strongly suggests one of the well known horns now on the market.

General Vehicle Rearranges its Staff.

To succeed R. McA. Lloyd, who recently resigned to join the International Motor Co., G. W. Wesley has been elected vice-president of the General Vehicle Co., of Long Island City, N. Y., whose plans for the manufacture of gasolene commercial vehicles, under the Daimler patents, in addition to the familiar G. V. electrics, now are well advanced. H. G. McComb has been appointed engineer of the gasoiene division and J. R. C. Armstrong engineer of the electric division, of which L. E. Lentz will be superintendent. C. W. Squires, Jr., who formerly was assistant to President Wagoner, has been promoted to the sales management of the big company. Irwin W. Howell succeeds Squires as assistant to the president.

Sturdy Purchases Sta-rite Spark Plugs.

The Sturdy Mfg. Co., of Chicago, makers of the spark plug of that name, has purchased the assets of the R. E. Hardy Co., of Chicago, which was thrown into bankruptcy in August last, and will continue the line of Sta-Rite plugs previously manufactured by the Hardy people. They comprise the Sta-Rite Vulcan plug, which is of the double porcelain type; the Venus, a mica plug, and the Gotham, a single porcelain plug. The Sturdy company also will go very largely into the manufacture of special brand spark plugs for the 1913 season.

Elmore Plant Purchased by Krebs.

The manufacture of the Elmore two-cycle car having been discontinued by the General Motors Co., the Elmore Plant in Clyde, O., has been purchased by the Krebs Motor Car Co. of that city, which is largely in the nature of the property reverting to its original owners. B. A. Becker, president of the Krebs company, Krebs himself and nearly all others identified with that truck producing enterprise previously were identified with the Elmore company.

McGraw Declares 60 per cent. Dividend.

Having prospered during the past year, the directors of the McGraw Tire & Rubber Co., of East Palestine, O., at their annual meeting last week, declared a stock dividend of 50 per cent. in addition to a cash dividend of 10 per cent. This action followed the increase of the capitalization of the company from $100,000 to $250,000.

OTHO ELECTRIC SYSTEM TO BE MANUFACTURED BY DEAN

Maker of Tuto Horn Secures Exclusive Rights to New Lighter and Starter—Device is of Self-Regulating Flywheel Type.

It is not often that a brand new device quickly is taken up by a reputable and old-established manufacturer, but that distinction has fallen to the Otho electric lighting and starting system, which but a few weeks since was introduced to the trade by the Otho Motor Co., of Boston, Mass. Apparently it immediately attracted the favorable attention of the Dean Electric Co., of Elyria, O., makers of the Tuto horn and other electrical devices, and as a result of negotiations which were entered into the Dean company has acquired the exclusive manufacturing rights to the Otho system and at once will produce the device in large quantities.

The system is of the type in which a single motor-generator unit serves both to furnish current for the complete equipment of lights and to start the engine, the unit being alternately generator or motor, according to whether the engine is running or the device is being used to start the engine. It differs from the majority of other such systems, however, in that the motor-generator unit is designed to take the place of the flywheel, which, of course, eliminates all gearing. A further difference between the Otho and other systems is that in the Otho there are no rotating wires or brushes; the field pieces and the commutator are the only parts which rotate, all of the winding and the brushes being stationary.

Willard Acquires a Third Factory.

Although the two plants which it now is operating fulfill its immediate requirements, the Willard Storage Battery Co., of Cleveland, has taken time by the forelock and has purchased the site and three-story brick and stone building on Lakeside avenue in that city previously occupied by the Frost Wire Fence Co. It will be styled plant No. 3. It will afford an additional 50,000 square feet of floor space and is admirably adapted to the Willard use, both on account of its arrangement and its close proximity to the Willard No. 1 plant. Like the other two plants, it will be equipped to duplicate in every separate detail the LBA storage battery, thus assuring not only ample room for the increased output which is in sight but guaranteeing that there will be absolutely no interruption of production should fire or other disaster affect the Willard operations.

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FIVE YEAR VOTING TRUST FOR UNITED STATES MOTOR

Official Plan of Reorganization Provides for It—Capital Reduced to $31,000,000—How Plans Will Be Carried Out.

Official announcement of the formal plan of the reorganization of the United States Motor Co. was made public late last evening, but save for the fact that it provides for the issue of voting trust certificates, representing both first and second preferred stock and the common stock, all of which are to be deposited for a period of five years with a voting trust consisting of three men, the plan does not differ substantially from that which was foreshadowed by the report of the creditors' committee, the salient points of which were printed in last week's Motor World.

The reorganized company will be capitalized at $31,000,000, instead of $42,500,000, as in the case of the company which went into the hands of receivers on September 11th last, the capitalization being divided as follows: $11,000,000 7 per cent. first preferred cumulative stock, $9,000,000 second preferred and $11,000,000 common stock. It is understood that the reorganization will carry with it considerable change in the official make-up of the company, but at last accounts the man who will become its head and direct its affairs has not yet been chosen.

As was stated by Motor World last week, an assessment of $24 per share will be levied on all the outstanding stock of both the United States Motor and Columbia Motor Car Co., which is one of its subsidiaries but whose stock is separately held, which assessment will provide $5,720,996 in cash, which, with $1,009,091, the amount in the treasury of the big corporation when it failed last month, will afford quick capital of $6,730,087, out of which the merchandise and banking creditors will be paid 25 per cent. in cash. The remainder, which is about $3,000,000, will be available for working capital.

In addition to their 25 per cent. these creditors will receive 25 per cent. first preferred, 25 per cent. in second preferred and 15 per cent. common, a total of 90 per cent. The holders of preferred stock will receive 24 per cent. in first preferred shares, 25 per cent. second preferred and 30 per cent. common, a total of 77 per cent. Holders of common stock will receive 24 per cent. in first preferred, 17½ per cent. second preferred and 30 per cent. common, a total of 71½ per cent. The holders of the $6,161,000 debentures will receive 50 per cent in first preferred, 50 per cent. in second preferred and 40 per cent. in common, a total of 140 per cent.

Voting trust certificates representing first preferred stock are intended to be distributed to creditors and stockholders participating in the plan substantially as follows:

To depositing holders of debenture bonds and bond scrip (50%)	$3,080,755
To depositing holders of claims against the Motor Company only (25%)	475,906
To depositing stockholders of the Motor Company and of the Columbia Company duly paying the assessments hereinafter provided for:	
Preferred stockholders (24%)	2,763,152
Common stockholders (24%)	2,957,844
Total	$9,277,657

The second preferred stock shall be subject to the rights and privileges of the holders of the first preferred stock. No dividends shall be paid upon or set apart for the second preferred stock in any fiscal year unless and until full dividends at the rate of 7 per cent. per annum upon the first preferred stock for all previous years subsequent to January 1, 1913, shall have been declared and paid, nor unless and until full dividends at the rate of 7 per cent. per annum upon the first preferred stock for the current fiscal year shall have been declared and paid or provided for by a fund set apart for the payment thereof.

Voting trust certificates representing second preferred stock are intended to be distributed to creditors and stockholders participating in the plan substantially as follows:

To depositing holders of debenture bonds and bond scrip (50%)	$3,080,755
To depositing holders of claims against Motor Company only (25%)	475,906
To depositing stockholders of the Motor Company and of the Columbia Company duly paying the assessments hereinafter provided for:	
Preferred stockholders (25%)	2,878,283
Common Stockholders (17½%)	2,156,761
Total	$8,591,705

Voting trust certificates representing common stock are intended to be distributed to creditors and stockholders participating in the plan substantially as follows:

To depositing holders of debenture bonds and bond scrip (40½)	$2,464,604
To depositing holders of claims against Motor Company only (15%)	285,543
To depositing stockholders of the Motor Company and of the Columbia Company duly paying the assessments hereinafter provided for:	
Preferred stockholders (30%)	3,453,940
Common stockholders (30%)	3,697,305
Total	$9,901,392

To the extent necessary to make distribution of voting trust certificates to holders of such of the notes of the United States Motor Co. endorsed by one or more of the subsidiary companies as shall not be paid in full under the plan, the capitalization of the new company may be increased. In case none of these notes shall be established or admitted as claims against one or more of the subsidiary companies, it is intended that there shall be distributed to the holders of such notes participating in the plan 25 per cent. thereof in cash and voting trust certificates representing first preferred stock 25 per cent. of the par value of $169,995, representing second preferred stock 25 per cent. of the par value of $169,995, and representing common stock 15 per cent of the par value of $101,997, and that the authorized capital stock of the new company shall be increased by said amounts; in such event there will be added to the cash provided by the reorganization 75 per cent. of the amount of such claims, namely, $509,985.

All first and second preferred stock of the new company and all common stock other than shares reserved to qualify directors shall be vested for a term of five years in Charles H. Sabin, Harry Bronner and James C. Brady, and their successors as voting trustees, and voting trust certificates in such form as may be determined by the committee will be distributed in lieu of stock.

Chicago Contributes Triplex Gas Saver.

Fred G. Bremer, former manager of the Twitchell Gauge Co., of Chicago, and I. N. Wilson, president of the Fowler-Carnes Co., of Aurora, Ill., have formed the Bremer-Wilson Mfg. Co., with offices at 1256 Michigan avenue, Chicago, to manufacture and market the Triplex gas saver and, later, several other automobile accessories.

Bremer is an automobile engineer of wide experience. His first connection was with the Bremer Machine & Tool Co., of Kalamazoo, Mich. He later served with the Pope, American Mercedes, Midland and United States Motor companies. As the name of the Triplex gas saver implies, it is a device designed to break up such globules of liquid fuel as may have passed through the carburetter without perfect admixture with the air content, or, in other words, to make the mixture homogeneous. In form, it is a heavy copper gasket enclosing a fine screen, and is intended for insertion in the intake passage, preferably close to the carburetter.

Slight Falling off of Car Imports.

Although 66 cars, valued at $155,227, were imported into the United States during the month of August, the total for the first eight months of the year shows a falling off of 10 per cent. in number and 6 per cent. in value. Up to the end of August, 1912, the imports were 532 cars, valued at $1,237,528, as against 608 cars, valued at $1,312,969, during the corresponding period of the previous year. The record in detail is as follows:

	August.		1st 8 Months.	
	No.	Value.	No.	Value.
France	33	$82,639	285	$699,881
Germany	3	5,705	39	92,854
Italy	5	10,899	51	85,864
United Kingdom	13	31,684	101	240,870
Other Countries	12	24,300	57	118,059
Total	66	$155,227	533	$1,237,528

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The Week's Incorporations

Los Angeles, Cal.—F. & K. Auto Co., under California laws, with $25,000 capital; to deal in motor cars. Corporators—T. F. Felt, W. B. Kerrick, Mary Felt.

Rochester, N. Y. — Fordham Co., under New York laws, with $3,000 capital; to deal in motor cars. Corporators—Gerald F. Fox, Eugene A. Reinke, Richard Stanton.

Detroit, Mich.—Detroit Standard Gear Co., under Michigan laws, with $50,000 capital; to manufacture gears. Corporators—D. M. Ireland, M. E. Smith, L. E. Straw.

Waterbury, Conn. — Taxi Service Co., under Connecticut laws, with $10,000 capital; to operate a taxicab service. Corporators—Charles B. Schoennahl, Michael W. Norton, Arthur A. Page.

Los Angeles, Cal.—Angelus Motor Truck & Transfer Co., under California laws, with $250,000 capital; to operate a motor delivery. Corporators—J. F. Clarke, L. W. Van Horne, and others.

Hopkinsville, Ky.—Hopkinsville-Cadillac Automobile Co., under Kentucky laws, with $10,000 capital; to deal in motor cars. Corporators—R. E. Cooper, T. W. Blakey, Odie Davis, Richard Levell, E. G. Peterson.

New York, N. Y.—Never Skid Mfg. Co., under New York laws, with $50,000 capital; to manufacture motor car devices. Corporators—Daniel E. Wing, George L. Lewis, Charles H, Staunton, all of 42 Broadway.

Indianapolis, Ind.—Glover Equipment Co., under Indiana laws, with $20,000 capital; to manufacture motor car accessories. Corporators—Frank L. Glover, Leonard Geiger, William A. Umphrey, Louis A. Libkings.

Salt Lake City, Utah.—Utah Automobile Livery & Taxicab Co., under Utah laws, with $50,000 capital; to operate a motor livery and taxicab service. Corporators—Abe Meeking, Jr., Charles A. Gillette, Frank J. Gustin.

Kingston, N. Y.—Taxicab Transportation Co., under New York laws, with $5,000 capital; to operate a taxicab service. Corporators—William Hilterbrant, Elizabeth K. Hilterbrant, Elsie Hilterbrant, all of Presidents' place.

Los Angeles, Cal.—American Tractor Co., under California laws, with $50,000 capital; to manufacture tractors. Corporators—Henry T. Boynton, Donci E. Newcomb, Co., under New Jersey laws, with $50,000 Russell Sears.

New York, N. Y.—Zilio Sales Co., under New York laws, with $5,000 capital; to deal in tire filler. Corporators—Edward Mayse, 300 Central Park West; Felix H. Mayse, Broadway and 98th street; Isaac J. Phelps, 305 Fifth avenue.

New York, N. Y.—Commercial Delivery Co., under New York laws, with $500 capital; to deal in commercial vehicles. Corporators—Abraham Miller, 1359 Third avenue; Nathan Tarakan, Louis Tarakan, both of 80 East 115th street.

Brooklyn, N. Y.—Mears Motor Vehicle Co., under New York laws, with $600 capital. Corporators—J. W. Mears, 139 Ocean parkway, Brooklyn; E. A. Kellam, Fort Hamilton avenue, Brooklyn; C. Mears, 136 East Fourth street, Brooklyn.

New York, N. Y.—United Tire Sales Co., under New York laws, with $500 capital; to deal in motor car tires. Corporators—A. G. Thaanum, 13-21 Park Row; Joseph T. Weed, 150 Hicks street, Brooklyn; Max Greenberg, 32 West 112th street.

New York, N. Y.—Used Car Company of New York, Inc., under New York laws, with $5,000 capital; to deal in motor cars. Corporators—Andrew F. McNamara, 220



FISK TIRE OFFICERS AND SALESMEN ASSEMBLED AT CHICOPEE FALLS

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Broadway; Gustavo Galiani, 57 Chambers street; Jacob J. Kramer, 220 Broadway.

White Plains, N. Y.—General Rim Co., under New York laws, with $150,000 capital; to manufacture rims and parts. Corporators—William Kaul, Robert W. Ashley, Frank Oberkirsch, 47 West 34th street, New York City.

New York, N. Y.—Ames Automatic Shock Absorber Co., under New York laws, with $25,000 capital; to manufacture shock absorbers. Corporators—Louis Bomeisler, 135 Broadway; George H. Edwards, 250 Broadway; George Isaksen, 133 Broadway.

New York, N. Y.—Industrial and Trading Co., under New York laws, with $5,000 capital; to conduct a commission business in motor vehicles and parts. Corporators—A. M. Becker, John A. Lemline, E. H. Ferguson, all of 27 William street, New York City.

New York, N. Y.—Knickerbocker Havers Co., Inc., under New York laws, with $50,000 capital; to deal in motor cars. Corporators—Erastus M. Cravath, Locust Valley, N. Y.; Albert C. Hubbel, 92 Fifth avenue; Burwell M. Crossthwait, Pelham Manor, N. Y.

Grand Rapids, Mich.—Hand Corporation, under Michigan laws, with $30,000 capital; to manufacture and deal in motor car accessories. Corporators—George G. Whitworth, Louis A. Cornelius, Harold C. Cornelius, George H. Hand, J. Arthur Whitworth.

Brooklyn, N. Y.—Monarch Auto Trucking Co., under New York laws, with $5,000 capital. Corporators—Daniel R. Rice, Eighth avenue, New York City; Helen Person, 367 Sterling place, Brooklyn, N. Y.; Walter H. Babcock, 234 Powers street, Brooklyn, N. Y.

New York, N. Y.—Englebert Tire Co., under New York laws, with $100,000 capital; to manufacture motor car tires. Corporators—Samuel K. Kellock, 135 Kenmore place, Brooklyn; Clarence B. Campbell, 16 Sidney place, Brooklyn; Edward W. Elverson, 82 Beaver street.

New York, N. Y.—Detroit Cadillac Motor Car Realty Co., Inc., under New York laws, with $100,000 capital; to act as a property holding company. Corporators—Henry Amerman, 2 Rector street; Charles T. Green, 30 Pinehurst avenue; Edwin B. Griffin, 337 West 14th street.

Buffalo, N. Y.—Buffalo Resilio Co., under New York laws, with $25,000 capital; to manufacture tire filler. Corporators—Stafford D. Noble, Alexander D. Falack, Philip F. Lonergan, Henry B. Collin, Samuel Welsch, Daniel L. Tharp, Raymond F. Nicholas, all of Elmira, N. Y.

MARMON TO BE NEXT HEAD OF SOCIETY OF ENGINEERS

Nominating Committee Selects Indianapolis Manufacturer for S. A. E. Presidency—Others Slated for Office.

Howard Marmon, of the Nordyke & Marmon Co., Indianapolis, will be the next president of the Society of Automobile Engineers. He has been selected for the office by the nominating committee, which just has presented its report, the nomination being equivalent to election.

The nominees for the other offices are as follows: Vice-presidents, Russell Huff, Packard Motor Car Co., and John G. Perrin, Lozier Motor Co.; treasurer, Herman F. Cuntz, Automobile Board of Trade; members of council, Eugene F. Russell, Locomobile Co.; Harold L. Pope, Pope Mfg. Co., and Joseph A. Anglada. Coker F. Clarkson, of course, will remain secretary and general manager of the society. Marmon will succeed H. W. Alden, of the Timken-Detroit Axle Co., who, as vice-president, succeeded to the higher office on the death of H. W. Donaldson in August last. The constitution of the society does not permit of re-election to the presidency.

In addition to President Alden, the officers who will retire are Harold L. Pope, vice-president; Hermann F. Cuntz, treasurer; Henry May, Howard Marmon and Charles Ethan Davis, members of the council. The members of the council who hold over are Charles B. Whittelsey, Hartford, Conn.; Arthur B. Cumner, Philadelphia, Pa.; Andrew L. Riker, Bridgeport, Conn.; Hermann F. Cuntz, New York, N. Y.; Howard E. Coffin, Detroit, Mich.; Henry Souther, Hartford, Conn.

The officers are elected by mail vote, the result of which will be promulgated at the annual meeting of the society, which will occur in New York City in January.

Changes Among Prominent Tradesmen.

A. L. Talbott has been appointed manager of the Atlanta (Ga.) branch of the Swinehart Tire & Rubber Co. He succeeds C. E. Holmes, resigned.

Frank Blaney has been appointed sales manager of the Columbus Buggy Co., of Columbus, O. Previously he was identified with the Havers Motor Car Co., of Port Huron, Mich.

E. L. Rettig has been selected for the post of manager of the Pacific Coast branch which the Federal Rubber Mfg. Co. is about to establish in San Francisco. As he has been connected with the Diamond branch in that city for nine years, it goes without saying that he is well acquainted with the territory.

George S. Waite has been appointed sales manager of the W. A. Patterson Co., of Flint, Mich., maker of the Patterson car. Previously Waite was assistant sales manager for the E. R. Thomas Motor Co., of Buffalo.

J. W. Cully has been appointed manager of the Detroit branch of the Swinehart Tire & Rubber Co., succeeding S. G. Andrews, who recently went into the retail trade in Saginaw, Mich. Previously Cully was connected with the New York Swinehart store.

Walter C. Lineaweaver has been promoted to the management of the Newark (N. J.) branch of the Goodyear Tire & Rubber Co. He succeeds George Hancock, who hereafter will devote himself wholly to the Goodyear wholesale interests in the State of New Jersey.

W. A. Somerville has been appointed assistant sales manager of the Stromberg Motor Devices Co., of Chicago, to fill the vacancy caused by the death of Ray Ballinger. Somerville will combine his new work with his duties as advertising manager of the Stromberg company, which latter office he has filled for some time.

M. D. MacNab has resigned the general management of the United Motor Chicago Co. to become vice-president and sales director of the Marion Motor Car Co., of Indianapolis. For three years MacNab has had charge of the Maxwell and Columbia interests in a wide expanse of Western territory and, therefore, "knows his book." He will make his headquarters at the Marion plant in Indianapolis.

Owen and Reo Remove from Broadway.

High rental, which has cut so deeply into the profits of all who do business on the famous thoroughfare, has been instrumental in deciding R. M. Owen & Co., eastern distributers of Reo cars, to leave Broadway. Accordingly, they have removed from 1759 Broadway to 19-21 West 62d street, New York. R. E. Ingersoll, manager of the Reo eastern branches, frankly admits that the rental had reached such a figure that choice was left of either raising the price of the Reo car or finding a location elsewhere, and they chose the latter alternative.

Cook Heads New Body Company.

Robert H. Cook, former general manager of the Auto Body & Specialty Co., of Flint, Mich., which became enmeshed in litigation, has organized the Cook Body Co. and taken over the plant and property of the old concern. The factory is located on West Kearsley street in Flint and will employ 50 men.

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ODD OUTGROWTH OF TIRE CHAIN PATENT LITIGATION

Dealer Buys Grips Which Court Said Did Not Infringe — When Court Reverses Itself He Refuses to Pay and Is Sued.

Had not the United States Circuit Court of Appeals in Chicago said one thing and then changed its mind and ruled oppositely, Max Ziesler, who is the proprietor of the Imperial Auto Supply Co., of New York City, might not now be the defendant in a suit in the Supreme Court for New York county, brought by the Whittaker Chain Tread Co., of Boston, Mass., which is suing him for $125, the price of a quantity of tire chains bought by Ziesler early last year. The matter has been decided adversely to the Whittaker people in the City Court, but they have carried it to the Appellate Term of the Supreme Court, where they hope to be able to secure a ruling more favorable to their interests. The matter had its beginning as early as two years ago.

Early in 1910, when the Weed Chain Tire Grip Co. brought an action in the United States District Court in Illinois, charging infringement on the Parsons patent by the Zigzag grip, that tribunal sustained the patent. On appeal the higher court reversed the ruling and declared the grip did not infringe, thereby apparently wrecking the patent and making tire chains "open" to the world. It was at that time that the Whittaker company sold a quantity of its chains to Zeisler. But before Zeisler could dispose of them the Court of Appeals, on reargument, reversed itself and on July 27, 1910, declared the patent valid. Zeisler then shipped back the chains to the Boston concern and refused to pay for them. The present action, while disclosing a somewhat remarkable outgrowth of patent litigation, is merely to cause payment for shipment of the chains.

Kosmak Takes Over Cubit $3 Horn.

The Cubit Electric Horn Co., of New York City, which two months since presented to the trade an electric horn at the sensationally low price of $3, has been taken over by the Kosmak Electrical Co., a New Jersey corporation, which was formed for the purpose, and which will not only continue the production of the Cubit horn but also will produce a spark plug, a dry cell, an induction coil and an electric whistle, all bearing the style Kosmak. The Kosmak cell, it is stated, will depart radically from present practices.

All of the men interested in the Cubit company are identified with the Kosmak corporation, which is located at 17 Stevens avenue, Jersey City, N. J. Its officers are as follows: Walter Kosinski, of Jersey City, president; Charles T. Cubit, Eatontown, N. J., secretary; Mungo J. Currie, Jersey City, treasurer; John R. Mack, New York City, general manager. Kosinski was for many years with the old Phoenix Telephone Co. and later with the Bell Telephone Co. It is claimed for him that he originated the present dry cell battery. Cubit is secretary and treasurer of the firm of Reid, Yeomans & Cubit, of 140 Nassau street, one of the largest drug houses in New York City; Currie is a well known corporation lawyer of Jersey City, and Mack is an engineer of repute.

Ohio Supply Project is Completed.

The Federal Motor Supply Co., of Cincinnati, which was incorporated under Ohio laws with $250,000 capital stock, has completed its organization by electing the following officers: G. W. Platt, president; Fred H. Berold, vice-president; Jesse W. Wozencraft, secretary; Emil G. Schmitt, treasurer; Edward H. Maffey, William C. Straehley, C. T. Woodrow, J. William Theobald and F. W. Stukenborg, directors. Offices have been opened in the Fourth National Bank building in Cincinnati, and it is the intention to maintain not only a large supply house in that city but to establish branches elsewhere.

Cleveland Dealers Admit Bankruptcy.

On the application of Edward L. Graves, one of the partners in the Alco Cleveland Motor Co., of Cleveland, O., F. H. Pelton was appointed receiver on Saturday last, 12th inst. The company, which is a copartnership, consisting of Graves and Otto R. Michels, has liabilities of $9,507.84 and assets of $6,895.35. Graves places his personal liabilities at $153.25 and lists as his assets two suits of clothes and one watch, valued at $20.

Tudhope to Move Nearer to Detroit.

The Tudhope Motor Car Co., which reproduces the Everitt car in Canada and in which B. F. Everitt and W. E. Metzger are interested, is making ready to remove its plant from Orilla, Ont., to Windsor, Ont., which is directly opposite Detroit. The removal, bringing the Canadian corporation in close proximity to the Everitt factory in Detroit, naturally will greatly facilitate its operations.

Top Company Financially Involved.

The French Auto Top & Supply Co., of Chicago, Ill., has filed schedules, showing assets of $3,157.08 and liabilities amounting to $4,188.84.

MANUFACTURE OF TIRES TO BE UNDERTAKEN IN ST. LOUIS

J. A. Swinehart, Not Swinehart Company, the Prime Mover—Expects to Produce Tires Within Six Weeks.

Reports that the Swinehart Tire & Rubber Co., of Akron, O., was making ready to locate a plant in St. Louis, Mo., and which emphatically and authoritatively have been denied, have been followed by the incorporation of the St. Louis Tire & Rubber Co., in which J. A. Swinehart, formerly of Akron, is the chief stockholder. He, however, absolutely has no connection with the Swinehart company and the Missouri project is in no way identified or associated with the latter.

The St. Louis Tire & Rubber Co., which was incorporated early this week, is capitalized at $150,000, of which $59,100 is represented by Swinehart's patents and a contract executed with him. The remainder of the shares represent cash subscriptions. Swinehart is the principal stockholder, holding 900 shares. The other six, with Swinehart, constitute the board of directors, each of whom holds 100 shares. They are Harry C. Barker, C. M. Skinner, Webster Groves, Alfred C. Einstein, William H. Glasgow, Roy F. Britton and C. C. Collins, all of St. Louis.

The new company has acquired a building in University City, which is a suburb of St. Louis, in which the necessary machinery will be installed so quickly that, it is stated, automobile tires will be produced within six weeks. It also is the intention almost immediately to erect an addition, 30 x 100 feet, to the building in University City.

Ohio's Officers Appeal to Creditors.

Although differences between C. F. Pratt, president, and A. E. Schafer, vice-president of the Ohio Motor Car Co., of Cincinnati, were said to be in part responsible for the appointment of a receiver, both of those officers have joined in an appeal to the creditors, urging the rejection of what is described as "the proposition recommended by a wrecking attorney" and which aims to put the company through bankruptcy proceedings.

They declare that the company is not insolvent and will not confess insolvency, adding that it is their understanding that the receiver has under consideration "two offers for the plant as a going concern, either of which will realize more than twice as much for the creditors as the wrecking proposition."

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AMERICAN MOTOR CARS STILL GAINING ABROAD

No Indication of Let-Up in Exports—August of Present Year 28 Per Cent. Better Than a Year Ago—Canada and Oceania Are Largest Buyers but Other Markets Develop.

Exports of automobiles from the United States continue to maintain their strength, the statistics for August—the latest period for which the figures are available—marking a gain of 28 per cent. in the total valuation of cars, parts tires and engines as compared with the same month in 1911. The increase in value of the exports was $507,700 and the figures for the Augusts of 1911 and 1912 were, respectively, $1,806,462 and $2,314,162.

Of a total of 1,321 automobiles exported, 57 were commercial cars and their value $107,245. The largest taker was Canada, which received 320 cars valued at $486,285. Next in rank are British Oceania, South America, Other Europe, Asia and Other Oceania and the United Kingdom. The greatest monetary gain over the exports of August, 1911, was made by Canada, which surpassed the previous figure by $171,848, an increase of 54 per cent. The geographical sub-division Other Europe gained by 55 per cent., or $62,011. The United Kingdom, which ordinarily is a heavy taker of American cars, fell away 53 per cent., or $113,238. Others who reduced their purchases were France, British Oceania and Asia and Other Oceania.

Of the South American countries, Argentina took 26 cars valued at $26,090 and 4 trucks valued at $7,053. Brazil purchased 107 cars valued at $102,132, and Chile, 2, Ecuador, 7, and Uruguay, 14 cars, $14,939. Other countries and their takings were: Australia and Tasmania, 143 cars, $60,842, and 1 truck, $2,163; Spain, 17 cars, $10,622; Sweden, 12 cars, $8,554; British South Africa, 32 cars, $27,218, and 1 truck, $570; Japan, 34 cars, $36,472; British India, 19 cars, $13,127; Panama, 6 cars, $4,931; Cuba, 9 cars, $11,126.

The American possessions—Hawaii, the Philippines, Porto Rico and Alaska—took cars in proportion to the order named, the total being $121,876 for August. The respective shipments to these four were $60,519, $31,562, $28,595 and $1,200, Alaska taking but one car. Hawaii took 42, the Philippines 29 and the island of Porto Rico 24 cars.

The valuation of cars, parts, engines and tires exported for the eight months ending with August was $23,103,855, a monetary gain of $8,737,062, or 60 per cent., over $14,366,793. the figure for the eight months ending with August, 1911. The gain in cars alone during the eight-month period was 61 per cent. Of the 16,807 vehicles shipped outward during the eight months, 135 were trucks, valued at $263,703. The record in detail is shown by the appended table:

August Tire Exports Show Big Gain.

During the month of August there was no indication of a let-up in the steady growth of the exportation of American tires, the gain for the month amounting to 57 per cent. The exports were valued at $405,781, as against $251,262 during August, 1911, an increase of $154,519. The chief takers of tires during the month were as follows:

England	$133,126	Brazil	$3,615
Canada	105,226	Trinidad	2,507
Belgium	87,241	Jamaica	1,880
Mexico	51,987	Panama	1,814
Japan	7,782	Philippines	1,333
France	4,140	Australia	1,226

For the eight months ending with August, 1912, the valuation of the tires exported was $2,240,826, while for the first eight months of 1911 the figure was $1,977,899, a gain of $262,927, or 13 per cent.

Oakland Locates Branch in Louisiana.

The Oakland Motor Car Co., of Pontiac, Mich., has established a branch in New Orleans, La. It is located at 745 Baronne street and is in charge of W. C. Gray.

	August			Eight Months Ending August			
	1911	1912		1910	1911	1912	
Automobiles—Exported to—	Values.	Quantities.	Values.	Values.	Values.	Quantities.	Values.
France	$45,024	51	$35,892	$613,737	$371,824	481	$368,955
Germany	7,049	58	45,021	284,772	98,332	310	244,747
Italy	5,597	32	21,880	347,629	175,511	208	191,132
United Kingdom	213,328	113	100,090	2,286,984	1,867,323	3,789	2,840,038
Other Europe	49,581	141	111,592	593,450	541,803	1,164	971,038
Canada	314,437	320	486,285	3,889,539	4,239,702	5,517	6,740,174
Mexico	18,669	25	35,289	431,594	276,733	150	218,309
West Indies and Bermuda	20,179	19	22,645	270,638	230,611	215	230,948
South America	122,080	174	172,916	286,651	726,309	1,245	1,461,459
British Oceania	295,548	226	212,544	262,495	1,153,744	2,345	2,161,049
Asia and Other Oceania	138,867	112	108,897	280,961	566,986	955	987,575
Other Countries	18,567	50	42,548	126,853	194,612	428	398,347
Total—							
Cars	.....	1,264	$1,288,354	.....	.....	16,672	2,834,533
Trucks	.....	57	107,245	.....	.....	135	263,703
Total Automobiles	$1,248,926	1,321	$1,395,599	$8,266,808	$10,443,490	16,807	$16,813,771
Parts	306,274	....	431,370	1,408,495	2,207,981	.....	3,325,123
Tires	251,262	....	405,781	.....	1,715,322	.....	2,240,826
Engines	.....	613	81,412	.....	.....	6,316	724,135
Total Cars, Parts and Engines	$1,806,462	....	$2,314,162	$9,675,303	$14,366,793	.....	$23,103,855
To American Possessions—							
Cars	.....	96	121,876	.....	.....	1,002	1,507,903
Parts	.....	....	23,886	.....	.....	.....	177,636
Tires	.....	....	43,306	.....	.....	.....	361,016
Total	.....	96	$189,068	.....	.....	1,002	$2,046,555
Grand Total All Countries	$1,806,462	1,417	$2,503,230	$9,675,303	$14,366,793	17,818	$25,150,410

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THE MOTOR WORLD

PUBLISHED EVERY THURSDAY BY

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor

S. P. McMINN HOWARD GREEN
R. W. SHERMAN E. F. HALLOCK

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Advertising Manager
HOWARD L. SPOHN

WESTERN ADVERTISING MANAGER
W. H. TRIPP, 1001 Ford Building, Detroit
GUS. H. JOHNSON

DETROIT, 1001 Ford Building CHICAGO, 1441 Monadnock Block
MAXTON R. DAVIES J. FRANK GILMORE

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NEW YORK, OCTOBER 17, 1912

EXPECTING TOO MUCH OF SALESMEN.

"Intensified salesmanship" has an awe inspiring sound but it well may be doubted that in seeking to improve the breed of order-takers their "intensification" may not be carried too far and to impracticable lengths.

It affords picturesque play for the imagination to maintain that the true salesman of automobiles, for instance, shall possess that knowledge which carries so very deeply as to reach into the mines from which the metal itself is extracted, or that the tire salesman shall be able to converse freely and entertainingly of the means employed to extract the priceless gum that grows on the banks of the Amazon; but it is greatly to be feared that if any salesman, or many salesmen, brought such knowledge to bear in prosecuting sales the prospective purchaser would be amazed and wearied to the disappearing point.

Carried to logical lengths, it requires that automobile salesmen incorporate the knowledge and virtues of the metallurgist, the botanist, the chemist, the electrician and heaven knows what else. It sounds superbly in theory, and such information undoubtedly makes interesting reading matter and is the sort of material of which attractive catalogs and other publications are made, but it has small place on the salesroom floor. People who seek to purchase motor cars or motor tires are not inclined to listen to lectures on metallurgy or rubber gathering.

In educating the salesman, it is of first importance that the educator keep his feet on the ground. The history or the romance of a particular industry cuts small figure in practical salesmanship, even of the "intensified" sort.

Generally speaking, knowledge of things in being is the chief essential, which implies that the salesman should know his car, or his tire, and that he should not be unfamiliar with the cars and tires of rival manufacturers. Such knowledge combined with tactfulness and a cordial manner will come near to carrying any salesman to the point of success. The blue skies, the mines and the rubber fields, the romance and the history, and the visions which they inspire, should be left to the writers of "fine frenzies."

WHEREIN TRUCK IS AKIN TO TROLLEY.

It is an indication of the progress that has been made in the construction of commercial motor vehicles that owners now are inclined to place them in charge of former drivers of horses rather than qualified chauffeurs. Were the motor truck a machine of many moods and whims, so to speak, requiring the constant attention of a highly skilled mechanic, the horse driver would have no place behind the wheel; and, as a matter of fact, it is only of comparatively recent times that it has been practicable to dispense with the high-priced specialist.

In this respect the motor truck is getting into the same class with the trolley car, which is intended to be driven by the motorman, but given what extra care it needs by specialists in the shops. Only in this way can the motor vehicle be made to operate with maximum economy, for it is obviously extravagant to pay a skilled mechanic to do drivers' work.

Apart from his inability to cope with mechanical troubles, the better sort of horse driver is a more suitable man for motor truck work than a regular chauffeur, not only because he is well satisfied with smaller pay, but because he is thoroughly familiar with trucking conditions and, moreover, knows many details of the handling of the material he hauls, all of which usually cannot be said of the "graduate" chauffeur. So it comes that the truck builder is solving more problems than the purely mechanical one of the truck itself, by making possible the economic division of labor.

FUEL TANKS THAT REQUIRE PROTECTION.

The increasing number of manufacturers who are adopting pressure feed fuel systems with the gasolene tank hung beneath the rear of the tonneau in the region of the rear axle, serves to emphasize the necessity for adequate tank protection. Not only does lack of protection lay the motorist open to the inconvenience of a shortage of fuel at a critical moment but there is the fire risk as well—made a visible hazard by the ever present tail lamp—with which to reckon. Already several dangerous fires have resulted from accidentally punctured tanks, at least two of which, both occurring the same night in New York City, during the crush incident to the recent naval demonstration, were occasioned by rear end collisions in which both the tank and the tail lamp were smashed, and other accidents of a similar nature are probable whenever and wherever traffic is congested, not to mention other occasions.

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NEW COMPANY PROPOSES CHAIN OF COAST GARAGES

Already Has Purchased Three Garages in Los Angeles—Primary Object To Relieve Peculiar Local Situation.

To operate a chain of garages on the Pacific Coast, and particularly in Los Angeles, the Consolidated Garage Co., capitalized at $1,000,000, has been organized in that city. It has already acquired the "P. E." garage in the Pacific Electric building, the Wall street garage and the three-story C. C. & C. building on Los Angeles street. An option also is held on the White Garage on South Olive street. It is probable that other garages will be acquired or will be erected before the first of the year.

While its ultimate plans include the maintenance of a chain of garages reaching from Mexico to Canada, the immediate purpose of the Consolidated Garage Co. is to relieve a peculiar situation which exists in Los Angeles. According to a local ordinance, no car may stand in any one place for a period greater than 20 minutes, and as some 4,000 cars are used daily in the business district, the embarrassment which results is acute and much mixed. The garages which the company has acquired, and which it plans to erect in Los Angeles, are or will be located in the business district and will be so laid out as to permit of ready ingress and egress. In fact, by the system in view, it is figured that it will be possible to deliver cars to patrons at the rate of one every 30 seconds.

The officers of the company, nearly all of whom have been identified with the Los Angeles trade, are as follows: F. C. Fenner, president; Elton Isbell, vice-president; H. A. Eckert, secretary; S. S. McKinney, treasurer; A. C. Guild, general manager; John C. Stick, counsel.

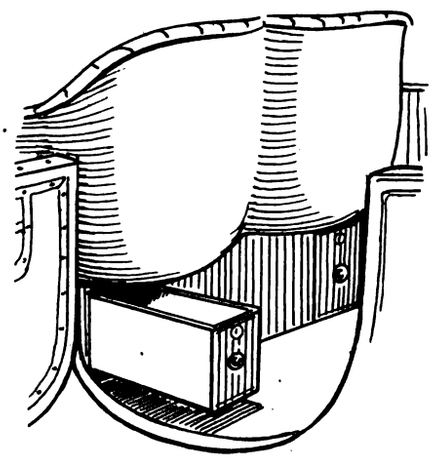
Nashville has a "Clearing House."

Nashville, Tenn., has decided to try the clearing house plan in coping with its used car problem, and the dealers of the city apparently are welcoming the new enterprise, although it has failed ignominiously in other cities. The style will be Nashville Automobile Clearing House, Inc., which will do business at First street and Broadway in a three-story garage and salesrooms.

Officers have been elected, with F. L. Richard, formerly with the Sutherland Automobile Co., of Louisville, Ky., as president and general manager; E. A. Burrows, formerly with the Packard factory at Detroit, vice-president; J. M. Redditt of Nashville, secretary and treasurer. The other directors are R. M. Miller, attorney, of Nashville, and A. J. Casey, of Lebanon, Tenn.

Little Known Features of Well Known Cars

Where to carry tools and spare parts always has constituted more or less of a problem with motor car designers, a problem which was merely side tracked but not solved by the box located on the running board. The necessity, or at any rate the desirability, of having the tools and materials where they were "handy" naturally was accountable for the location; the call for cars of clean design, however, has set body designers to seeking out new locations, or, in cases where the running-board location is adhered to, to designing boxes which fit into the curves and lines of the body.



CADILLAC TOOL DRAWERS

One of the solutions—the one which is offered by the designers of the Cadillac car—comprises the usage of space not otherwise utilizable, and yet leaves nothing to be desired as to the facility with which the tools can be reached or so far as concerns the appearance of the car. As shown in the sketch, the instruments and spares are carried in two drawers of ample capacity for the accommodation of even more tools than generally are carried, which are located underneath the front seat, one on either side of the gasolene tank. The drawers open into the tonneau, and can be reached very handily by a person outside the car, simply by opening the tonneau door. A "catch" with which the drawers are provided prevents their jarring open when the car is in motion.

"Gasolene Engineers" as Reformers.

Just what will come of it is as yet a matter of speculation, but the radical reformation of the chauffeur is at hand, if any substantial results are achieved by the Gasolene Engineers' Protective Association, Inc., which on Tuesday last, 15th inst., filed its "papers" with the secretary of state in Albany, N. Y. The object of the organization, which may become national if it grows at all, is to put a stop to joy-riding, drunkenness and vice of every kind among chauffeurs and to help the police enforce the "rules of the road." Inasmuch as it has been charged that some 200 of New York city's chauffeurs are ex-criminals, it is needless to state that the "gasolene engineers" will begin work in the metropolis. Among the fifteen directors are William Hurst, Chauncey E. Drummond and Henry J. Ritzel, all of New York city.



October 19, Narbeth, Pa.—Track races under the management of F. D. Hall.

October 19, Hartford, Conn.—Track races promoted by E. W. Powell.

October 19, Fort Smith, Ark.—Track races under the auspices of the Inter-State Fair Commission.

October 21, Chicago, Ill.—Chicago Motor Club's reliability tour around Lake Michigan.

October 24-27, San Antonio, Tex.—Track races promoted by the San Antonio Automobile Club.

October 26, White Plains, N. Y.—Track races under the auspices of the White Plains Agriculture and Fair Association.

October 26-28, San Diego, Cal.—San Diego-Phoenix road race, under the auspices of the San Diego Automobile Dealers' Association.

November 8-16, London, England—Society of Motor Manufacturers and Traders' annual show in Olympia Hall.

December 7-22, Paris, France—Paris Salon.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

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SOLUTIONS OF
THE USED CAR PROBLEM

In Competition for Motor World's Cash Premiums of $50, $25, $15 and $10 for the Four Best Articles Dealing With the Subject.

By DR. H. M. FRYER, Riverside, Wash.

Revision or amplification of the guarantees that now prevail, doubtless will impress most of those engaged in the automobile industry as a radical means of solving or lessening the used car difficulty, but radical though it may appear, I am firm in the belief such revision or amplification will serve the purpose. For instance, let the guarantee be made to read about as follows:

We, the undersigned..... warrant this car No..... 1912 series..... to be made of good materials, and will replace free of charge, any part that proves defective within one year, provided such parts are returned charges prepaid to any dealer handling this car at the time.

At any time in the future, we agree to receive the above numbered car at our nearest agency equipped to make necessary repairs, repair the car at a reasonable charge to be paid for by the owner at the time of the repair.

We further agree to use reasonable diligence in reselling this car and to deduct from such sum received for the car an amount equal to the same per cent. of agents' profit as the original sale.

Signed.....

Analysis of the workings of this guarantee will disclose its far-reaching nature. Undoubtedly the older established makers would fare best, but as long as the advantages would be shared by the user, that feature would be without objection.

Mr. A may represent a class of users who purchase new cars every year. After a season's use, under ordinarily favorable conditions, cared for by a competent chauffeur, a car of the sort is worth two cheap cars.

This car Mr. A returns to his nearest dealer, who puts it in order and receives a fair remuneration, which the dealer ordinarily can figure clean profit as such work can be done by help regularly employed, and when not otherwise engaged.

The garageman has been benefitted and the car goes on the floor for sale.

Mr. B represents the buyers of the second class who believe such a car is better than a new cheap car, and presents himself as a prospective customer.

The dealer presents to Mr. B the guarantee originally given to Mr. A and makes the statement that if there is any doubt as to the guarantee being authentic, Mr. B may write the factory to have it verified. Mr. B buys the car at a price agreed upon by Mr. A and receives the same guarantee from the makers as was given when sold to Mr. A. The dealer receives his commission according to the guarantee.

This makes a fair return to Mr. A, the repair fees go to the mechanical department of the garage and the dealer has earned two commissions and received them.

Mr. B finds the car exactly as represented and has received a satisfactory amount of service out of it, and after a year or two the question again arises as to the disposition of the used car. Mr. B looking over his guarantee finds that any dealer representing the makers will take it back and repair it, provided Mr. B pays the charges, and the car will be resold in the same manner as long as the car has any value.

It is believed that Mr. A and Mr. B and the repair department and the dealer have gotten out of this car the greatest amount of profit and service, which has been equitably distributed.

Failure of the maker to stay in the business soon must become known to the users and a tendency follows to buy from the older manufacturers.

Makers would be stimulated to maintain a high standard of workmanship and materials, to the end that the advertising feature of a frequently resold car would be available.

The buyer would have access to a reliable history of any used car in which the maker would be equally interested with the buyer.

Every used car at the present time advertised for sale by parties not agents for the maker, is a menace to the reputation of that car, for the specific reason that the seller is not interested further than getting the greatest amount possible out of it.

The buyer of such a car is as likely to get little satisfactory service out of it, and the maker comes in for a share of the blame.

The makers of cars can well afford to stand back of their product as long as there is any usefulness in it.

By W. F. S., Cambridge, Mass.

In Massachusetts, as, I believe, in most other States, there are a large number of people who change their cars regularly each year. They will ride in nothing but the "latest model." They do not change because of any defect in their old car or any particular advantage in the new one; it is merely a matter of pride.

Now if all the manufacturers will adopt what is the only logical method of building cars; namely, producing them by "series," merging one into the other without distinction or loss of time, this class of yearly buyers will keep their old cars for a longer period than 12 months. Instead of yearly flooding the market with cars—perfectly good, but almost impossible to sell—the dealer could devote his energies to selling a new car to the man who otherwise would have been a more or less difficult prospect for a used car.

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SYSTEMATIC ADVERTISING.

Why It Is Absolutely Necessary in Order To Bring Results to Dealers—Plan Worked Out by One Dealer That Proved Efficient.

The word "advertising" is used by many men to cover almost every phase of merchandising. If display windows are dirty or even poorly lighted, it is said to be bad advertising; very likely it misinforms the public as to the kind of dealer operating the store and the kind of cars he sells; therefore it is bad. If, on the contrary, windows are kept clean and neatly dressed it is called good advertising. All this is in the sense that anything that represents either the dealer or his methods to the public at large is some kind of advertising.

But, in this article, the word "advertising" is intended to cover the use of the printed message in the form of newspaper advertising—circulars, folders, booklets or letters. There is no doubt but that all these forms of advertising may be and can be used profitably by any dealer. There is likewise no doubt but that many of these forms of advertising are being neglected.

Manufacturer's Service a Big Opportunity.

These remarks are prompted by the remembrance of two barrels full of booklets, catalogs and other handsome literature standing beside the junk pile of a Pontiac (Mich.) dealer, whose garage and salesroom had been visited for the purpose of replenishing gasolene and oil supplies. Familiarity with printed matter made it easy to estimate that at least a hundred dollars of the manufacturer's good money was tied up in the barrels which were destined for the scrap heap.

It was obvious that, in spite of all that had been written and said about advertising, this dealer failed to appreciate the opportunities that came his way. All of which makes it pertinent to remark that advertising is one of the most important links in the chain of plans and activities that mean good salesmanship and good sales. This is true in any business, but especially true in the automobile business.

Merchandising plans that fail to take into account the varied dollar-making opportunities afforded by a systematic, carefully planned advertising campaign, may succeed, but they are quite likely to fall short of the mark. Therefore, the automobile merchant who is not only selling cars but building a business from which he hopes and expects to obtain a reasonable income for many years, finds it advisable and necessary to make a certain definite advertising appropriation for the season, based upon the number of cars he expects to sell.

Careful Planning Essential to Success.

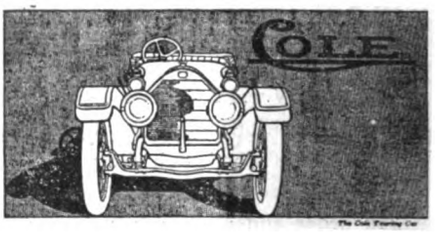
How much the appropriation should be depends upon many factors—the price of the car, competition, local conditions, etc. No fixed rule applies equally everywhere, but in advertising, as in selling, the same general principles fit any locality or condition.

One of the first principles of good advertising is to have a plan. You do not get far in personal salesmanship unless you have a definite plan and work to it; you cannot get far in advertising unless you have a definite plan and work to it. Just as soon as one recognizes this fact he begins to emerge from haphazard methods to the era of good business and higher efficiency. In a word, he begins to eliminate waste or lost motion.

The Pontiac dealer had no plan: he was depending upon the sales that floated in; he worked solely upon the prospects with whom he came into personal contact. He neglected entirely the seed-sowing process that might have been working upon a thousand prospects at a cost of $10 a week for postage. The two barrels full of attractive, business-promoting literature might have been turned into a sales-building campaign.

Study Your Car and Your Prospects.

The successful fisherman is the one who not only knows what the fish looks like, but where it is found, what it feeds on at difference seasons of the year—the kind of bait that appeals to it—the best time to go after it, etc. In a word, he knows all about what he is angling for, and, using the proper bait, he generally lands it. The successful advertising plan works in just the same way. Usually there is no mystery about success when you study it backwards; the mystery is why so many men miss doing the plain, simple, direct, common sense things that would bring success frontwards.



122-Inch Comfort!

The beauty of the $4,000 or $5,000 car is its comfort. Passengers are not packed in like sardines and huddled up close to the motor. There is room to spare and the occupants are out of the zone of motor vibration.

That is because the high-priced car has a long wheelbase. Long wheelbase also makes the car ride easily, smoothly, steadily. It reduces road bumps and smothers vibration.

Like the high-priced car the Cole has a long wheelbase. 122 inches—every inch for comfort. And the Cole price is not $4,000 or $5,000. It is $1,885.

If the Cole had no other distinctive feature, it would deserve the consideration of every motor car owner or prospective owner.

But the Cole also has a reliable Self-Starter—no cranking. It has the Ward Leonard Dynamo Electric Lighting System—lamps and headlights lighted from the seat. It has demountable rims—no trouble to change tires.

From every standpoint the Cole is the car for ease of riding and ease of mind. Made in Coupe, Limousine, inside drive Limousine, 5-Pass. Touring Car, Toy Tonneau, Torpedo Roadster, and Special Speedster.

All Cole models will be on exhibition at the Grand Central Palace Automobile Show

Colt-Stratton Company

2000 Broadway, at 66th St. Phone, 6000 Columbus

ONE OF THE COLT-STRATTON ADS WHICH EMPHASIZED COMFORT.

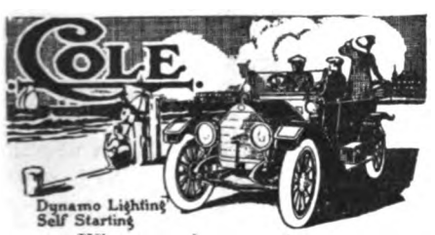
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AWAKE-NDISING WORLD

The Colt-Stratton Co., 2000 Broadway, New York, eastern distributors of Cole cars, are typical of the modern automobile dealers who study their prospective customers and see in each piece of literature forwarded by the factory a selling opportunity. When anything new comes from the factory, time and thought are given to determine how best it can be used in business-building. They advertise in the newspapers and advertise well; they follow it up by letters to their prospects. By these common-sense, tried-out methods they have built up a big business.

Sought Out a Convincing Point.

After carefully canvassing the situation at the beginning of the 1912 season, the Colt-Stratton Co. decided that inasmuch as all cars in their price class were uniformly reliable the great feature the buyers of cars of this class were particularly interested in and keen on getting was—comfort. A series of advertisements was prepared, all emphasizing comfort—comfort through the long wheelbase; comfort through the luxurious upholstery; comfort through the long springs; comfort through the lighting dynamo and the electric starter, etc., but always and everywhere the long 122-inch wheelbase was featured.



ANOTHER COLT-STRATTON AD. WHICH MAKES THE MOST OF WHEELBASE

Hammered Hard On One Point.

Now, here is where the cleverness of the planners is seen: They placed their advertisements in the newspapers, but their campaign did not end there. As each advertisement appeared it was clipped from the paper or a newspaper proof of it sent to a list of prospects, with a letter.

The first letter was just fourteen lines long. It told the receiver that the Colt-Stratton Co. would like to write him (or her) a letter occasionally, or perhaps send a folder once in a while telling about Cole cars. A postcard was enclosed, and if the recipient did not wish to hear more about Cole cars the postcard could be used to head off further letters. At the same time Mr. Stratton, vice-president, who signed the letters, closed the letter by saying, "I hope I won't get the postcard."

Needless to say, he got very few postcards. The second letter was accompanied by the folder referred to in letter No. 1 and further stated that a catalog was waiting for the prospect and that signing the enclosed postal would bring it. This time, Mr. Stratton said, he "hoped he would get the postal." Those who did not return the postal received another letter enclosing another postal and another folder. The fourth letter told how successful the Cole company had been; the fifth asked criticism of the advertisement that had run in the papers and enclosed a copy. The opening paragraph stated that in the course of a discussion some people had argued that the feature most buyers were interested in was reliability, but that the writer thought all cars of equal price were reliable and that buyers were chiefly concerned in comfort.

The series consisted of twelve letters, the crowning piece of literature being an advertisement quoting the experiences of a large number of local Cole owners.

The characteristic feature of all letters was a friendly yet dignified tone—and a conspicuous lack of any intention of "hounding" sales. There was just the right measure of enterprise mixed with a cordial invitation to have the prospect come to the salesroom and see and judge for himself. It was an ideal series; it was carefully and thoroughly planned and systematically carried out. And in these two points, careful planning and systematic execution, are found the salient principles of any successful campaign of advertising or salesmanship.

"Annealing" Glass with Salt Water.

Strange as it may seem, merely to boil glass articles in a weak solution of salt and water and then to allow them to cool slowly has a very marked effect in reducing their brittleness. Incidentally, the treatment makes the glass less susceptible to fractures due to quick cooling after it has been heated, as, for instance, under the influence of the acetylene flame in head lamps or the oil flame in side lamps. The treatment is styled annealing.

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PROBLEMS INVOLVED IN GAS TURBINE CONSTRUCTION

How Overcoming First Difficulties Has Raised Others and What They Are—Heat the Greatest Problem of All.

Despite the strong attraction of the gas turbine and the advances which have been made toward its perfection within a comparatively few years, there still remain many problems which must be solved in a practical way before such prime movers may become practical. The steam turbine no longer is an object of curiosity. But the word gas as applied to turbines is intended to convey that the actuating medium is composed of the products of combustion. Nominally, to burn coal, for instance, in order to obtain gas which may be utilized in a turbine, appears on the surface and actually is a simpler matter than to burn the coal to produce steam, which in turn is used in the turbine. And briefly this explains one of the principal reasons for the appeal of the gas turbine, for by its use at least one function is eliminated.

Gases Difficult To Explode.

With the elimination of that function, however, another is added. Coal gas, or illuminating gas, or producer gas, or gasolene gas is difficult to explode unless it is compressed and mixed with the proper proportion of air. The mixture of the gas with air, of course, is a simple matter, though the compression of the mixture introduces problems which are difficult of solution. Without going deeply into the matter, the effort required to compress the mixture generally is only slightly less than the effort put forth by the machine when it is running, the concrete result being that the efficiency is considerably lower than can be entertained. Gradually, however, such difficulties have been overcome, and there are at present several excellent examples of the gas turbine in operation abroad. In America, Nikola Tesla has been actively engaged in perfecting a gas turbine of his own which operates on an entirely different principle from any of those which are in existence. The machine, however, still is in an experimental state.

Intense Heat of Burning Gas.

With the practical elimination of the difficulties attending compression of the mixture to an explosible degree, still another problem crops up, and it is with this one that designers chiefly are concerned at the present time. With the steam turbine, extreme temperatures of 1040 degrees Fahr. with super-heated steam are handled quite readily, but with the gas turbine the burning gas often reaches to four or five times that temperature and therein lies the difficulty. The solution of the problem requires first that proper materials to withstand the terrific temperatures be used, and, secondly, that some means be provided for cooling the rotor blades and the combustion chambers. The cooling of the combustion chambers presents no particular difficulty, for they may be water jacketed after the manner of the ordinary gasolene or gas engine, but in cooling the rapidly rotating blades other means must of necessity be employed.

Holzwarth's Scavenging System.

In the Holzwarth system, which is of German origin, the stream of hot gases introduced into the revolving parts is followed by a scavenging current of cold air to ensure a moderate temperature, the walls of the explosion chambers being thus exposed to the high temperature gas only for the fraction of a second. The inventor of the system considers that the influence of differences of temperature does not constitute an obstacle to the construction of an explosion turbine on this plan, and experiments carried out on machines made under his system would seem to indicate that the materials in common use—cast iron and steel—can be employed safely for all the constructive details and parts, including the turbine blades and nozzles.

Has Several Combustion Chambers.

One of the peculiarities of the machine constructed under the Holzwarth-Junghans patents is the employment of several combustion chambers, each with the requisite adjuncts which are arranged in a circle around the motor and come into action one after the other, by which means the turbine rotor receives equalized power impulses. In running the machine the combustion chambers are filled with the mixture of air and gas at a comparatively moderate pressure, and the gases resulting from the explosion are discharged against the rotor and there exert their useful effect. After expansion is complete and the pressure of the injected gas has subsided, atmospheric air is blown or sucked in at low pressure and sweeps out the residual products of combustion. The chamber is then filled freshly with atmospheric air, the fuel mixture is blown in, and the charge is exploded by a spark. According to Holzwarth the extra work entailed by the operations of conveying the air needed for scavenging and for admixture with the fuel gas can be effected by the agency of the heat extracted from the waste gases.

A gas turbine on this principle, running at 3,000 revolutions a minute, has given up to 1,000 brake horsepower on suction gas of 1,100 to 1,200 calories per cubic meter. Experiments also have shown that liquid fuel of all kinds can be utilized, but if petroleum, gas-oil, or coal-tar-oil is employed it is necessary to raise the initial heat of the combustion chamber to approximately 1,000 degrees Fahr. if complete combustion is to be obtained.

Mixing Steam With the Gas.

Another method by which the high temperature of the ignited gas may be reduced has been patented by the Deutz Gas-Motoren Fabrik. According to this system, high pressure steam is mixed with the charge of fuel gas and air before ignition, and it is claimed to lend itself to gas turbines driven by separate explosions, charges of compressed air, and a charge of superheated steam being passed alternately into the combustion chamber. The advantage of this arrangement is that there is not only a decrease in the temperature but also that the work done at each explosion is augmented.

The characteristic feature of the system patented by Aug. Reuff, of Strassburg, Germany, is the periodic admission of air and of the fuel in such a way that the gas is introduced into the combustion chamber when it is filled with air. The unmixed charge of air is then allowed to pass out through a valve and the fuel gas is free to spread itself throughout the entire space available for combustion.

Big Screwdrivers and Broken Screw Heads.

A big screwdriver should be used very gingerly on a small screw that turns hard, for under the circumstances it is quite an easy matter to break off half the head Should this happen, the screw often can be removed by sawing or filing a new slot through the remaining half of the head and partly into the shank at right angles to the old slot, or by filing small flats on the half head and using a heavy pair of pliers.

Filing by the Reverse Process.

A small piece of metal can be filed to a true surface by moving it over a file which is held stationary much more easily than by the more usual reverse process. It is extremely difficult to run a file perfectly straight, but it is not difficult to hold the work flat on the file.

Blows that Cause Invisible Tire Damage.

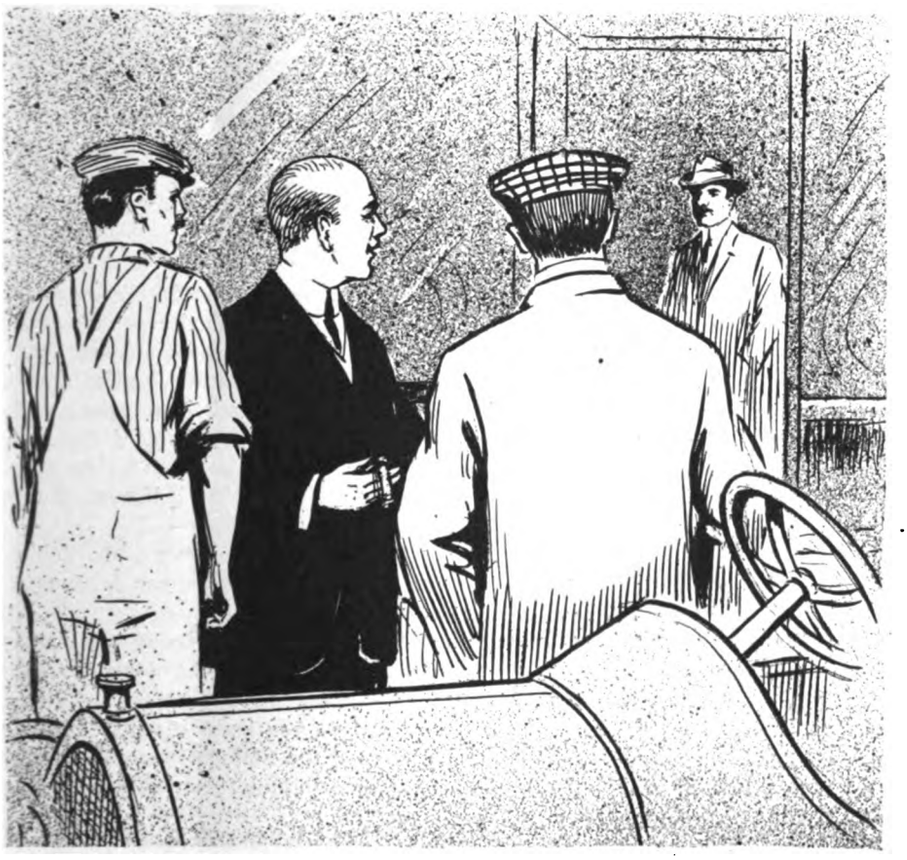
A violent blow on a tire, such as may result from striking a good sized stone while running at considerable speed, is capable of rupturing the fabric inside sufficiently to cause a blow-out at some future time.

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"TOO MUCH UNNECESSARY LYING" SAYS REILLY

Lets Fall the Opinion in the Course of a Discussion on Repair Work with Sales Manager—Truthfulness, Telephone and Human Nature Factors that Make Friends and Relieve Even Emergency Situations.

Reilly interrupted the conversation with the factory Sales Manager as a dust covered tourist tooted his horn in front of the doors, and before the stranger had time even to wonder if anyone was coming to see what he wanted the little dealer was on his way to the street; in his haste to leave the office he neglected to put on his hat, and the Sales Manager, remaining within the office,



"I'LL TRY TO FIX YOU UP," REMARKED REILLY

smiled as he saw the autumn sun transform the dealers' almost thachless scalp into a near-imitation of the dome of that famous State House in Boston. Then, moved by curiosity, the Sales Manager strolled to the door.

Transient With a Broken Spring.

The tourist was explaining that he had broken a spring and wanted a new one put in immediately so he could reach before supper the big city where was located the factory in which the car had been built and where the Sales Manager made his headquarters. Reilly called the repair-shop foreman.

"How long will it take to fix this? Can you do it at once?" asdked Reilly.

"It won't take long to put in a new spring," answered the foreman, as he inspected the damage, "but," and he looked at his watch, "it's three o'clock now and we've got the Clarendon car which is promised for four o'clock. It's almost finished, but all the men are pretty busy on hurry jobs, and if we get the Clarendon car out I don't see how we can do this before five."

"Just a minute, Mr. ———?" said Reilly to the stranger.

"Foote's my name."

"Well, wait just a minute, Mr. Foote," and to the Sales Manager who still was at the door the dealer said, "Jim, ask the girl to get John C. Clarendon on the 'phone. will you? Tell him I want to speak to him."

"I'll try to fix you up," remarked Reilly to the tourist, and straightaway hurried into the office, where the telephone was waiting.

"Mr. Clarendon?" said Reilly. "Yes, about your car. We promised it for four o'clock and it is nearly done now, but a tourist in one of our cars has just pulled in with a broken spring and wants it fixed. I don't want to disappoint you, and if you say so we will go ahead with your car, but you certainly will be doing him a favor if you could take your car an hour later. How about it? Will it be any inconvenience to you?"

Gets Permission to Delay Job.

The reply evidently was satisfactory, for Reilly, with a "Thank you," hung up the receiver. "Go ahead with the job," he directed the foreman; "Mr. Clarendon says five o'clock will suit him as well as four. He isn't going to use the car until late in the evening, anyway."

"We can have your car ready in an hour or less, Mr. Foote; won't you come in and wait? Our waiting room and, in fact, the whole establishment, is at your disposal."

"Oh, no; it will do us good to stretch our legs; we'll walk around town a while."

As Reilly and the Sales Manager went back into the office the whole Foote party was well on its way down the "row."

"Kind of fussy about an hour or so, aren't you?" ventured the Sales Manager in a tone which sounded as if he really meant it.

"Why not?"

The Sales Manager's answer was a shrug of the shoulders as he again settled into the chair he had vacated when the Foote party interrupted.

"Jim," said Reilly, "do you remember that order of five cars I sold to the several members of the Brownell family?"

A Five-Car Sale and the Reason.

"I certainly do. That was one good piece of work," was the enthusiastic answer. "Why?"

"Nothing," said Reilly, "except that just such a thing as I did to-day, bothering about 'an hour or so,' made those sales."

"How?"

"Well, to begin with, old man Brownell—

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the one who owns the stores—generally leads the family in buying cars. What he gets the rest get. He used to drive a car that is about as high priced as any that is turned out. One day he pulled up in front here in tow of a taxicab. His clutch was broken. He wanted to know if I could fix it. I told him I could. He wanted to know when I could have it done. I called the repair-shop foreman and he said we could have it out the next night at six o'clock. I thought that was about the time we'd need, but I always like to get the foreman's word to make sure. Old Brownell didn't say anything except that he would send the chauffeur after the car at six o'clock the next night. Then he got into the taxicab and made off.

Ready Right on the Minute.

"The next night at six sharp the chauffeur walked in and asked if the car was ready. And it was ready, and inside of ten minutes the car must have been at Brownell's house. He used to send down here after that for all of his repairs, although the service station for his own make of car is nearer to him. I began to suspect that he was coming here because we turned things out as we said we would do, for he always took pains to ask the exact hour the car would be done and the chauffeur was always here on the minute.

"One day the old man himself dropped in to leave the car for repairs, and he came right out in his blunt way and said he was pleased with the way we turned out our work. He said it was not so much that we were better workmen than any other shop, but we always had things done when we said we would have them."

"But, Reilly," interrupted the Sales Manager, "How can you always tell just how long a job is going to take? That's something our engineers and expert repairmen at the factory can't tell."

Adds Margin to Estimated Time.

"I can't tell," said Reilly. "I can, however, tell just about how long it ought to take, and to make sure I add a little extra margin of time. The bigger the job, the more the margin. This spring job ought not to take long with the men hard at it, and unless something unforeseen turns up it will be out safe enough inside of an hour. And if we can notify a man his car is done ahead of time, don't you think he's pleased?

"But to get back to old Brownell. Even if I was somewhat surprised when the old man kept sending his car here instead of to his own service station, I was due for the biggest surprise of all when he drove up one day and began to talk car. He wanted to know if I thought we could make our car give as good service as the car he had been using. I told him we sure would, and then he wanted to trade in his car and get one of my new ones. He wanted too much, but when I showed him why I couldn't give so much he bought a car right then and there.

"Then the rest of the family began to come in, and inside of two months I sold the five cars. The rest of them were so anxious to follow the old man's lead that they were willing to take good prices on their old cars. I wouldn't wonder but that those sales also had paved the way to others, and the whole thing hinged on giving old man Brownell his car that first time just when I said I would.

"I always make it a practice to do that. The surest way of finding the right thing to do at any time is to put yourself in the other man's place. If one of my customers, or anyone else, for that matter, comes in here and wants to know when I will have a car done, I first find out when we can expect to get it out and then make the promise—and once the promise is made I'll move heaven to keep it. Take Clarendon, for instance. I told him I'd have his car out by four o'clock. Some men would have taken a chance on his not calling for it before five and would have gone ahead with the transient job, for transients certainly are entitled to consideration. I could have gotten away with it all right, but Clarendon is a much satisfied man since I called him up and asked him if he would wait another hour. He knows I'll have the car ready when I promised, and it will be ready, too.

Getting Permission to Break Promise.

"Very often I have to break a promise like this, but I seldom have had any trouble in getting permission to break it. Generally it doesn't make such a great difference to a man if his car is delayed for a time, and even if it is going to inconvenience him a bit, unless he is an out-and-out crank he will gladly do a favor for a transient who wants to get out on the road again.

"Down where Brownell used to get repaired, he told me, they used to promise anything. Their idea of making a satisfied customer was to promise anything he wanted, regardless of whether they could keep the promise or not. One day he went in with a worn brake band. It was so bad he disliked driving any further with it. They said they would have the car ready by the next day at 2 o'clock. At 2 o'clock his chauffeur telephoned him that the car was still in the shop. Brownell telephoned the shop, and this time he got a promise for three hours later. Three hours later they put him off again, until the next forenoon, and it was the following afternoon before he got the car. Then he went down and got it himself. He asked the manager why they hadn't got the car out on time. The excuse was that 'emergency jobs' had interrupted. He then asked them why they hadn't notified him. There was no answer to this. 'I suppose,' said Brownell, 'if emergency jobs keep coming in I would have to wait until Christmas for my car; is that the idea?' The manager began to trot out excuses, but the old man said, 'Don't say any more. There may be enough excuses, but there is no reason.' That was about the end of his business in that shop. His last experience there made it necessary for him to postpone a long tour to the mountains, and by the time he got the car it was raining and the roads were mud.

Keeping Promises as an Asset.

"Reliability in the promising line, Jim, is one of the most valuable assets a business man can have. It has taken me some years to build up the business I now have, but, without blowing my horn too hard, I believe I have a reputation for being truthful. I detest a liar; he's worse than a thief—and he steals more from himself than he does from anyone else. If I tell a man in this town anything he believes it, and there certainly are times that it comes in handy to be believed. There's an awful lot of lying in this business than can be avoided simply by remembering that human nature is pretty much alike the world over and that when it is necessary to delay a job or break a promise, if the truth is told, the 'other fellow' will be found ready to meet one more than half way. And with telephones so handy, it——"

"Mr. Foote on the 'phone, Mr. Reilly. He wants to know if his car is done," announced the office girl.

By the office clock it was ten minutes to four. "Tell him it'll be done in ten minutes," answered Reilly.

"How do you know it will?" impatiently exclaimed the Sales Manager. "You never even went to look. That's fine reliability!"

The Employe Truthful, Too.

"The foreman said it would be done at four o'clock, didn't he?"

"Yes," answered the Sales Manager, "but——"

"But nothing!" said Reilly; "if he said so it is so. I make him be just as truthful with me as I am with the public."

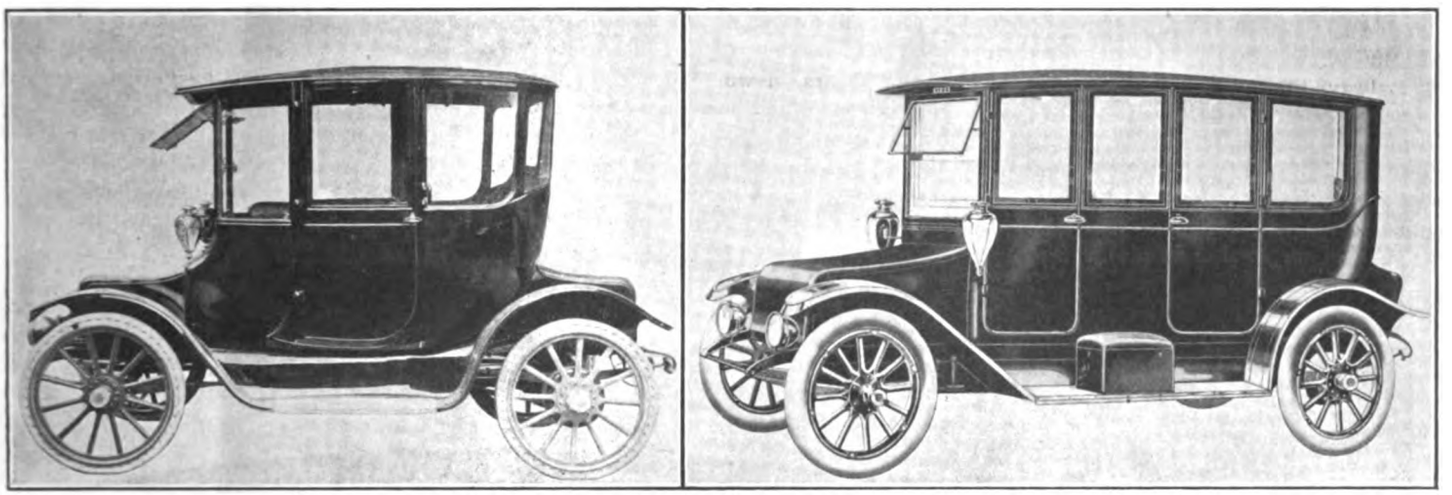
As Reilly spoke, the casting of a shadow across the salesroom floor caused both men to look across and out into the alley which led to the repair shop.

"See?" said the dealer with a gesture of triumph. Rolled out in readiness to be cranked up was the Foote car—and there were seven minutes to spare on the promise.

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AUTOMOBILES CONSPICUOUS AT ELECTRICAL SHOW

Two New Trucks and Two Rectifiers Constitute Chief Elements of Newness – Pleasure Cars Illustrate Advances in Body Design and All Vehicles Exemplify Simplified Mechanism.



TWO NEW DETROIT ELECTRICS—A "CLEAR VISION" BROUGHAM AND A 7-PASSENGER LIMOUSINE

There can be no doubt that the sixth annual electrical show—it is styled in full, New York Electrical Exposition and Automobile Show—which is housed in Grand Central Palace, where it will remain until Saturday night, 19th inst., is a pleasing spectacle to look upon, what with its myriad of twinkling lights and its weird and wonderful apparatus.

Vehicle Makers to the Fore.

As becomes an exposition of electrical light, heat and power, the lights form practically the only decoration that has been attempted, although no shortcoming in this respect is apparent. Also, there is an abundant exhibition of heat, if it may be styled an exhibition—electric heaters in full blow, electric toasters and a hundred and one other heat producing electrical devices of which the average individual scarcely ever dreams. But the power element of the show is most eloquently suggested by the capable appearing trucks and the neat and silent electric pleasure cars that dot the main floor. Altogether there are just 11 brands of trucks and pleasure cars on view, which lends color to the forecast that the show would be the "greatest ever" as an exposition of electric vehicles exclusively, the word exclusively implying that no gasolene propelled vehicles share the limelight with the electrics, though, as has been told, there are many other things besides electric vehicles to catch the eye of the visitor. For instance, there are exhibits of four of the foremost storage battery manufacturers, any one of which individual "shows" is an exhibition in itself, admirably staged, well managed and educational to a degree seldom exceeded.

Of the twelve manufacturers of electric vehicles who were scheduled to exhibit their wares, only one, the S. R. Bailey Co.., failed to put in an appearance. The others are as follows: General Vehicle Co., General Motors Truck Co., Buffalo Electric Vehicle Co., Anderson Electric Car Co., Lansden Co., Studebaker Automobile Co, Atlantic Vehicle Co., Baker Motor Vehicle Co., Cleveland-Galion Co., Champion Electric Vehicle Co., and Ward Motor Vehicle Co. The battery manufacturers represented are: Edison Battery Co., Electric Storage Battery Co., Philadelphia Storage Battery Co., and Gould Storage Battery Co.

Baker Alters Design of Coupe.

Among those manufacturers whose exhibits embrace both pleasure and commercial vehicles, the Baker exhibit is conspicuous by reason of the inclusion of a new type of coupe in which the seats are so arranged that the occupants of the forward seats may face in practically any direction without obstructing the view of the operator. The design provides for the option of two methods of control, one being by means of the regulation steering lever operated from the rear seat and the other by means of a steering wheel on which is mounted the controller handle, operated from the forward seat, in which case all the passengers face forward. The front glass is in the form of a rain-vision windsheld and is especially low at the lower edge in order to permit the driver an unobstructed view of the road. Fenders are of leather, and throughout the construction unusual attention has been paid to details with a view to producing an exceptionally handsome and serviceable vehicle of the most luxurious type.

Improved Battery Suspension.

In the Baker two-ton commercial chassis which is displayed, several important alterations in construction are apparent. The battery tray, for instance, now is heavily braced to the side frame members in order to minimize the chance of injury to the batteries in backing up to loading platforms; the single set of service brakes has now been supplemented by an emergency set applied by means of a side lever and operating on drums on the countershaft; the frame has been strengthened by liberal reinforcements; a dust-tight casing has been placed over the controller mechanism; the trigger preventing the controller from being inadvertently thrown to the reverse position has been taken off the controller handle and placed on the segment, thus necessitating two separate movements to obtain reverse. Also, the Baker line of commercials has been increased by the addition of a new model which is rated at 3½ tons capacity and which is quite similar to its heavier and lighter predecessors except as regards the size of parts which are commensurate with the truck's capacity.

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Detroit Adds a New Model.

The Anderson Electric Car Co. of Detroit, Mich., also exhibits both pleasure and commercial vehicles, though the single delivery car which is displayed is not shown with the pleasure cars on the main floor but together with three or four other pleasure cars, is in demonstration service on the improvised "track." Of the two vehicles that are displayed on the main floor one is a brand new creation which displays a number of unusual features. It is styled a clear vision brougham, the designation serving as an indication that, regardless of the position of the occupants of its seats, the driver's view is unobstructed. The forward seats are of the individual type and are arranged so that the occupants face forward. The control mechanism is placed in front of the left forward seat. The other front seat is of the swivel type and is arranged to fold up out of the way when not in use. The clear vision idea is carried even to the construction of the back of the car, in which the older pattern corner panels are replaced by curved glass panels which permit an unobstructed view to the rear and sides.

Weight Reduced Where Possible.

Another quite unusual feature of construction is the use of aluminum for the roof instead of wood, the concrete result being that the weight of the vehicle is materially reduced. Weight reduction has been carried out systematically in other parts of the vehicle as well, castings and machined parts in a great number of instances having given way to drop forgings. By way of rendering control easy alike to the tall and to the short, a new type of pedal has been adopted, the new construction, which is pictured herewith permitting easy and quick adjustment of pedal height by the simple expedient of removing a couple of bolts and replacing them.

Buffalo Changes Hood Design.

Appearing for the first time under its new name, the Buffalo electric, as is natural, exhibits many of the earmarks of the former Babcock, though in the refinement which has been made a new type of slanting hood, which is the most apparent visible change from previous construction, has been adopted, to say nothing of several constructional alterations, which include a new type of rear axle calculated to raise still higher the high standard of efficiency of the cars.

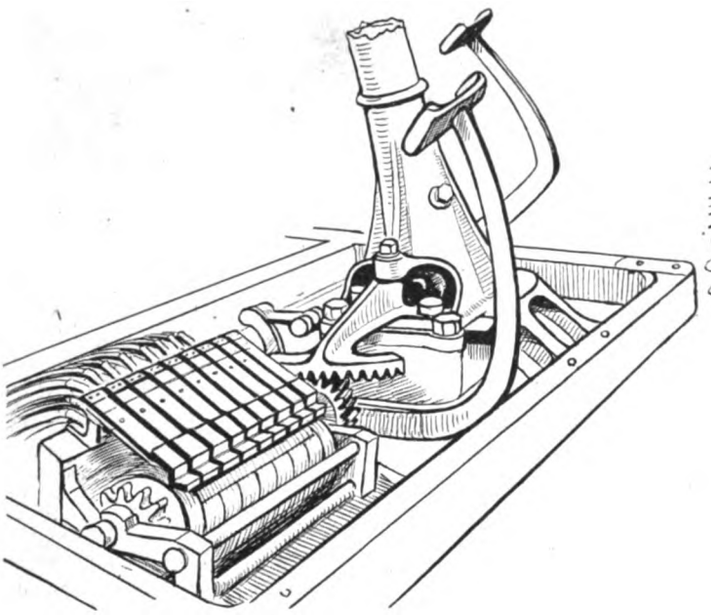
First Electric With Wire Wheels.

Conspicuous among the four cars in the exhibit is a coupe mounted on McCue wire wheels—it is said to be the first electric pleasure car ever to be so equipped. In fact, wire wheels are optional equipment on any of the models, though on some of them their choice entails a slight increase in price. In all of the models except one a wheel is employed for steering, the different model being the first of its kind in the line to employ a lever steering gear. In the roadster models a decidedly "gasolenish" effect has been obtained with the aid of the new sloping hood, low hung bodies and carefully shaped fenders. And the effect is in no wise belied by their speed. They are capable of a maximum speed of 35 miles an hour, and under favorable conditions can cover as much as 75 miles on one charge of the battery. The standard battery equipment consists of 42 cells of 15 plate Philadelphia; Hycap-Exide Ironclad or Edison battery is optional, though at a slight increase in price, however.

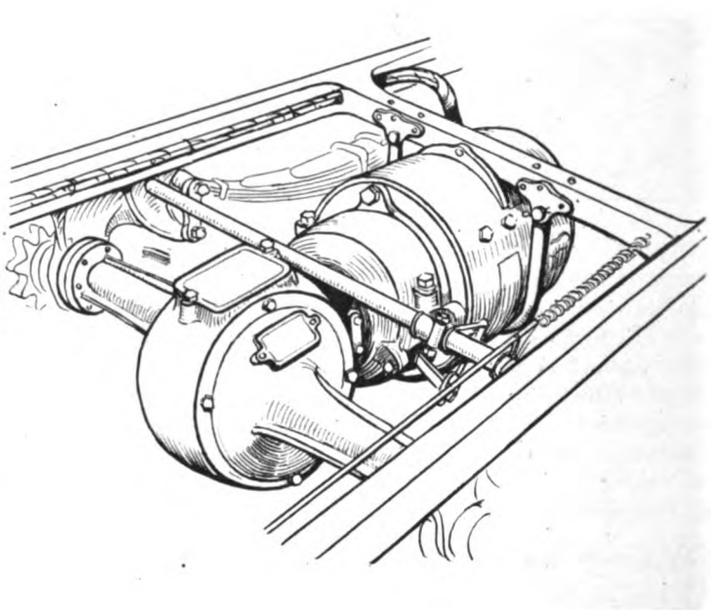
Champion and Atlantic Make Debut.

Of the 11 makes of vehicles displayed, but one, strictly speaking, is new, though another is comparatively new in that it is making its first appearance at any show. The newcomer is the Champion, manufactured by the Champion Wagon Works of Owego, N. Y., for which the Champion Electric Vehicle Co., of 100 William street, New York City, is the sole sales agent. The other—the Atlantic—has, within the few months it has been on the market, created considerable of a reputation for itself, though it has not previously been publicly exhibited. It is manufactured by the Atlantic Vehicle Co. of Newark, N. J.

In evolving the Champion truck, the manufacturers have adhered closely to the use of standard materials, the idea behind the production being to market a vehicle for which repair or replacement parts can be obtained quite easily and with the least possible loss of time.



LANSDEN INTERCONNECTED CONTROLLER MECHANISM



LANSDEN UNIT POWER PLANT, SHOWING SUSPENSION

Replacement Question Studied.

With this desirable end in view all the component parts are of standard construction, produced by recognized parts specialists, and are readily obtainable from stock. The vehicle is made in two sizes, the larger rated at 2,000 pounds capacity and the smaller at 750-1,000 pounds capacity. In both vehicles accessibility has been made a fetish as much as it has in any other car, and as in an electric the battery is the part which generally requires the greatest attention and care, it has been placed up under the driver's seat, which may be tilted bodily, thus exposing the whole battery tray. Either Edison or lead batteries are supplied. Edison equipment consisting of 60 cells of either A4 or A6 capacity, and lead

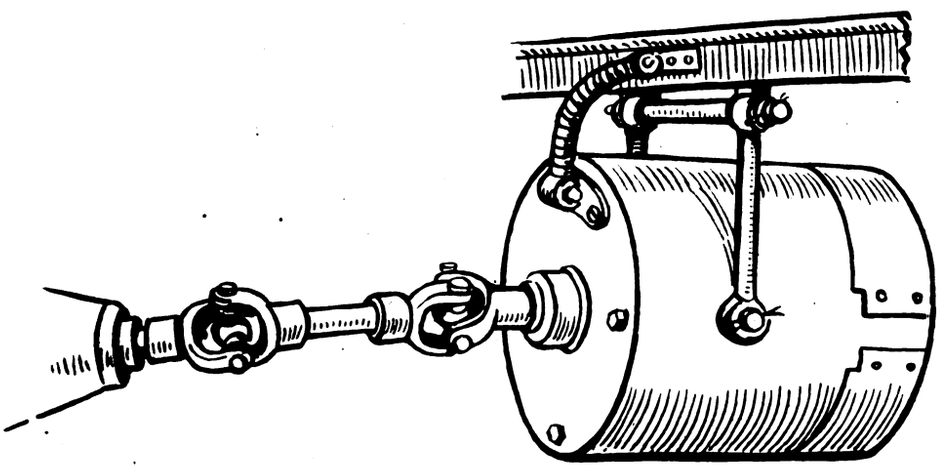
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equipment consisting of 44 cells of 13 plates for the larger vehicle. For the smaller one, the equipment consists of 26 cells of 11 lead plates or 40 cells of Edison A4.

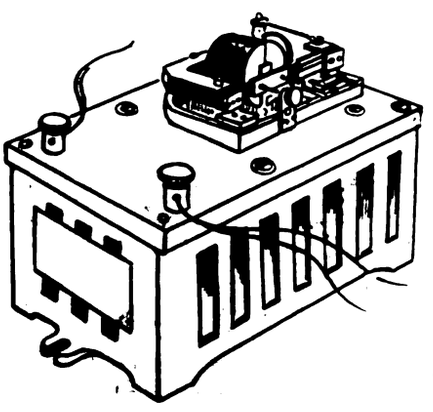
Simple Motor Suspension.

In the smaller vehicle, the manufacturers have adopted what is probably the simplest possible method of drive. The motor, which is a Diehl, rated at 36 volts and 35 amperes, is flexibly hung from a cross frame member and drives through a short shaft and two universal joints directly to the rear axle. The shaft is encased in a tight housing and the reduction gear is a combination bevel and spur. The whole arrangement is simple in the extreme, and there are few parts that are likely to get out of order or to require attention beyond occasional lubrication. In the larger vehicle, the motor, which is a General Electric mounted in Hess-Bright bearings, is similarly hung, but the first reduction is through the intermediary of a Morse silent chain with the final drive by side chains in one model and the same shaft drive in the other. The wheelbases of the two models are 80 inches and 100 inches, respectively, the available loading space being 122 inches by 60 inches in the smaller and 142 inches by 60 inches in the larger. Both are mounted on solid rubber tires, wheel sizes being 32 and 36 inches for the two models; tire diameters are proportionate.

The Atlantic, which is the other truck new to show-goers, is distinguished principally for its clean-cut, business-like appearance. To be brief, there is nothing radical or out of the ordinary in its make-up. The effort which has been made in its production to reduce parts to the minimum and to bring accessibility and simplicity to the forefront are easy of discernment in the single two-ton chassis which is displayed. The battery, which in the case of the vehicle on view consists of 44 cells of 17 MV Hycap-Exide, is carried beneath the loading platform, which is unusually long by reason of the location of the driver's seat nearly over the front wheels. The motor is an 85-volt, 28-ampere General Electric machine and drives through a "silent" chain to a countershaft and the regulation side chains. The wheelbase of this particular model is 9 feet 6 inches, and on a standard tread of 62 inches the available loading space measures approximately 10 feet 6 inches by 5 feet. Altogether, there are four sizes of trucks in the Atlantic line, including 1, 2, 3½ and 5 ton capacities, the specifications varying only as regards the size of parts.



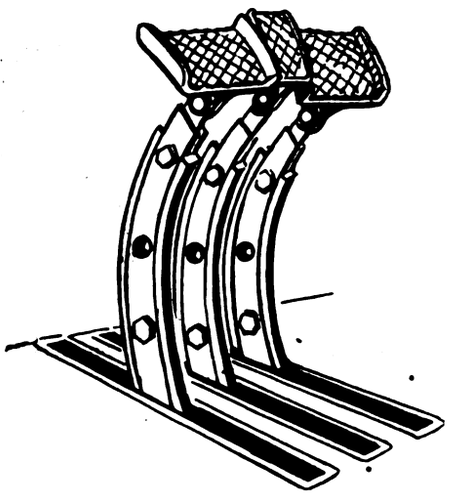
MOTOR SUSPENSION AND DRIVE OF CHAMPION ELECTRIC TRUCK



WAGNER A. C. RECTIFIER

Lansden Adopts Unit Construction.

The Lansden exhibit is conspicuous by reason of the fact that it contains, in addition to a brand new type of tank wagon which incorporates not a few new and interesting features, and a standard two-ton chassis, one of the new one-ton capacity chassis built around a new unit-construction motor and transmission system. In the new construction the motor, countershaft and differential mechanism form a rigid unit, which by reason of the method of attachment to the chassis frame provides three-point support. The motor drives forward to the countershaft by means of a very short shaft, final drive being by



DETROIT ADJUSTABLE PEDALS

means of the orthodox side chains. The controlling mechanism also has been altered slightly in order to provide means for interconnecting the emergency brake pedal and the controller. Under the new arrangement, which is illustrated herewith, depression of the emergency brake pedal first returns the controller handle to the neutral position, regardless of its position at the time the pedal is pressed, and then applies the brakes.

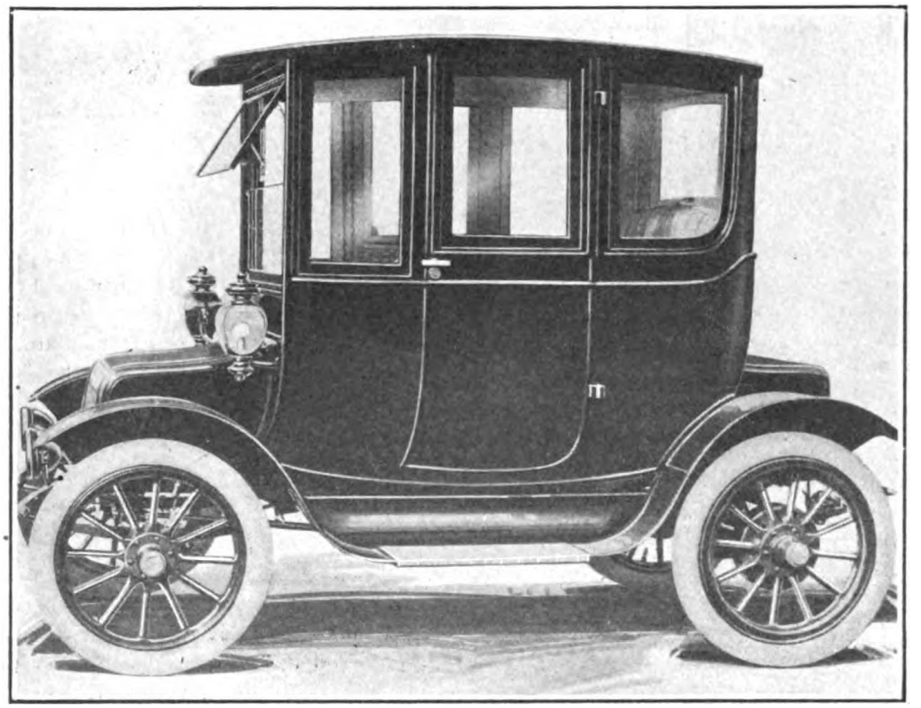
Five-Ton Electric Tank Wagon.

The Lansden tank wagon which forms a very effective background for the exhibit was constructed for the street cleaning department of the Borough of Richmond and is mounted in a standard five-ton chassis. The particular feature of the wagon lies in the incorporation of an automatic pressure maintaining apparatus by means of which the fluid in the tank is forced out over the road in two flaring sprays. Pressure is maintained on the water or oil, as the case may be, by means of a small electric motor driving a two-cylinder air compressor, the whole mechanism, together with the automatic switch, being carried in a small house just forward of the end of the tank. The usefulness of the pressure spraying apparatus, it is pointed out, lies in the fact that the water or oil may be thoroughly distributed over the road surface and does not tend to collect in puddles. Incidentally, the air pressure is useful in cleansing the tank of oil when it is desired to utilize it for water sprinkling.

General Motors Makes Few Changes.

A single five-ton chassis occupies the space alloted to the General Motors Truck Co., and except for a few minor alterations, which are strictly in the nature of refinements, it is the same chassis that made its initial appearance at the automobile show in Madison Square Garden last January.

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NEWEST BAKER COUPE, RATED A MODEL OF LUXURIOUSNESS

Carries Batteries Above Chassis.

One of the refinements which has been made lies in the adoption of a new composition material for the mounting of the controller and switches, which, as heretofore, are carried in an accessible position beneath a foreshortened hood in front of the dash. The vehicle is one of the few in which the batttery tray is carried above the chassis frame, which position, it is pointed out, is advantageous for the reason that any loading platform may be used in removing the battery from its tray; special battery platforms are unnecessary. The distinctive initial drive from a single heavy-duty motor through a flexible ribbon of steel to the countershaft ahead of the rear axle is retained without material alteration, and the final drive is by means of side chains.

G. V. Demonstrates Baggage Truck.

The General Vehicle Co.'s exhibit is another which is graced by a really big vehicle, a 3½-ton stake body truck, which, like the exhibits at the Studebaker and Lansden spaces, already has been sold and shortly will be delivered to its new owners. The remainder of the exhibit is made up of a 1,000-pound delivery wagon of the same type as several which recently were delivered to a prominent New York firm of jewelers, and a light station baggage transporting truck. For the edification of those who care to see the baggage truck in operation, and the remarkably easy way in which it can be manipulated in small spaces, one of these vehicles is demonstrated almost continually on the third floor, where an improvised "track" has been laid out for demonstration purposes.

Battery Tray Supported on Springs.

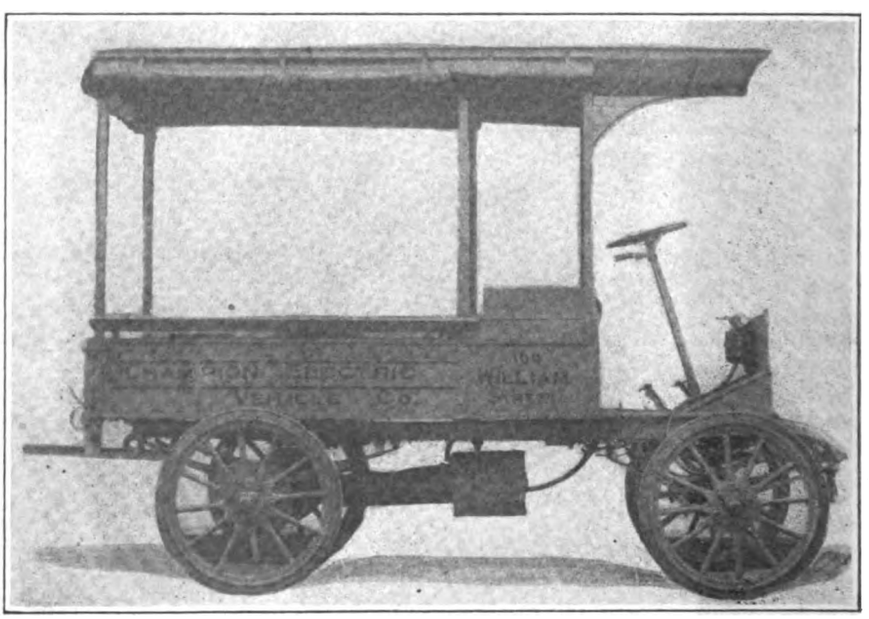
Among the few other manufacturers who stage really big electric trucks is the Studebaker Automobile Co. of South Bend. Ind., whose space is directly opposite the main entrance to the hall. In all, three vehicles are exhibited—a five-ton brewery truck, a two-ton truck and a 1,000-pound delivery wagon. In the smaller models few, if any, alterations have been made, though in the five-ton vehicle a number of important changes are apparent. The frame, for instance, now is of channel instead of angle section: the battery equipment has been changed to consist of thin plate cells and the mileage of the truck considerably increased; both the countershaft and the motors now are mounted in heavy-duty ball bearings; corresponding to the change in battery equipment, the motors now are slightly larger and are rated to consume 45 amperes. As heretofore, the two motors drive through self-contained spur gear reduction to the countershaft and thence to the rear wheels by means of side roller chains. One of the distinctive features of the line is that the battery is mounted on auxiliary leaf springs within the battery tray, thus effectually cushioning it from shock and preventing deterioration consequent to the plates.

Baggage Truck With Four-Wheel Drive.

One drive unit, consisting of an axle and a pair of wheels mounted on horses, is exhibited at the space of the Cleveland-Galion Truck Co. The vehicle of which the unit forms part is somewhat similar to the General Vehicle baggage truck in that it is intended for the same purposes, though it differs from it in very nearly everything else. For instance, whereas the General Vehicle truck drives and steers from only one end, the Cleveland-Galion truck drives and steers from both ends, the motive power in each case being supplied by a storage battery. The Cleveland-Galion truck was illustrated and described in detail in Motor World under date of September 5, and since then it has undergone no material alterations in design.

Ward Shows Only Trucks.

Other than those that have been mentioned, the Ward Motor Vehicle Co.'s space is the only one which is given over entirely to an exposition of commercial vehicles. But one truck, rater at 2,000 pounds capacity, is exhibited and is in the popular stake



CHAMPION 1000-POUND DELIVERY WAGON, SHOWING DRIVE

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body form. As is the case with so many other manufacturers of commercial vehicles, little room for improvement in design or construction has been found, and such slight alterations as have been made have been by way of further standardizing parts so as to minimize time and labor lost in making necessary repairs or replacements. Wheels are fitted with S. A. E. standard rims as a means of facilitating tire replacements, and throughout the construction of all the vehicles in the line a visible attempt has been made to preserve a uniform appearance.

In the realm of the battery producer, four prominent manufacturers are represented—Gould, Philadelphia, Electric, and Edison. At the exhibit of the Electric Storage Battery Co. there is shown a complete power house unit set up and connected, in addition to vehicle, ignition and central station batteries in every condition of manufacture. Similarly, at all of the other three exhibits, batteries are exhibited with all their secrets laid bare, the Edison exhibit including the familiar and ingenious "jarring" device by means of which a half a dozen cells continually are lifted and dropped several inches the while they continue to light with undiminished brightness a row of incandescent lamps. At the space of the Philadelphia Storage Battery Co. considerable display of the thin plate type of battery which of late has come into such general use is made and the exhibit is rounded out with battery cases and plates and materials.

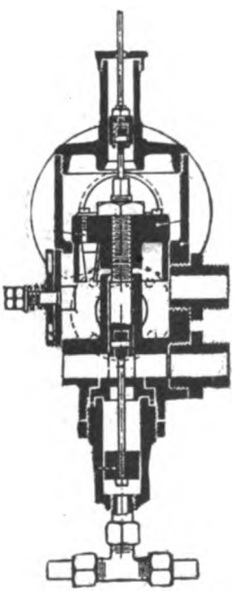
In the way of accessories, there is little to interest the average car owner, unless he happens to be one of the few who rely upon outside sources of current for charging their ignition or lighting batteries. Both the Edison alternating rectifier, which was illustrated and described in Motor World last week, and the new Wagner A. C. rectifier are displayed in operation. The Wagner rectifier, like the Edison device, is of the vibrating type, though it differs from the latter in that the vibrator coils are excited from the battery current instead of from the A. C. current. The device is simple in the extreme, is very small and compact, and is automatic in action. Its operation merely requires that it be attached to a convenient electric light socket and to the battery to be charged. It may then be forgotten until the battery has absorbed all the current necessary to bring it to a fully charged condition.

A very convenient form of material for some kinds of work is cold-rolled steel in rectangular bars. This is of the same quality as steel shafting, is soft and easily worked and is accurately finished and polished, as is shafting. It is made in quite a large variety of cross-sections.

KEROSENE CARBURETTER OF NEW DESIGN APPEARS

British Product of American Lineage Shows High Efficiency—Heat and Gasolene Necessary, However.

Kerosene carburetters have been no less striven for abroad than they have in America, and though an almost unlimited number of British and Continental devices of the nature have been brought out within a comparatively short space of time, none appears to hold more real promise than does the Stewart-Morris, which only recently has made its appearance. The device is the product of the Stewart Precision Carburetter Co.—which is the outgrowth of



STEWART-MORRIS CARBURETTER

the California carburetter of that name—of 199 Picadilly, W., London, England, and according to tests which were made under the supervision of the Royal Automobile Club, its economy in the matter of kerosene consumption was nothing short of remarkable. Despite its noteworthy performance, however, it still retains the inherent disadvantage of many other kerosene carburetters apparent in its inability to furnish gas upon which a motor can be started "from the cold." In other words, to make it an effectual device necessitates the carrying of a supply of gasolene for use in starting. Incidentally, heat is essential to its operation.

In structure, the carburetter differs considerably from anything else of its kind, though, as might be expected, it bears a striking resemblance to the Stewart gasolene carburetter produced by the same company. Its principal characteristic is that the suction of the engine is not relied upon to atomize the fuel. Instead, the fuel is forced through a small orifice under pressure and thus is effectually sprayed into the intake pipes. Before entering these pipes, however, the mixture of kerosene vapor and air first is passed through a "heater" formed of a copper coil inserted in the exhaust manifold. Having passed through the "heater" and thereby having become gasified, the mixture is returned to the carburetter for a further admixture of cold air and then is passed into the engine cylinders in the orthodox manner. For starting purposes, a small supply of gasolene is carried in an auxiliary tank connected to the carburetter, with the kerosene, by means of a three-way cock which serves to allow either fuel to be used. No adjustments for kerosene consumption are necessary.

According to the tests which were made by the R. A. C., the Pathfinder car to which the carburetter was attached was driven some 2,000 miles at an average consumption of 21.24 miles to the gallon of fuel. During the test, 1,000 miles were driven over ordinary roads, in which case the consumption figures out at 20.90 miles to the gallon, and 1,000 miles were driven on Brooklands track, when 21.59 miles were covered to the gallon of fuel. The best performance of the carburetter, gained at 25.2 miles an hour, showed a consumption of 27.19 miles to the gallon. In the course of the test the engine was started directly on kerosene 23 times, the longest interval between stopping and starting being 17 minutes. On nine occasions the engine was started on kerosene after gasolene had been injected into the induction pipe, the longest interval between stopping and starting being 45 minutes. The shortest period between starting on gasolene and switching over to kerosene was 10 seconds and the longest was 4 minutes 20 seconds.

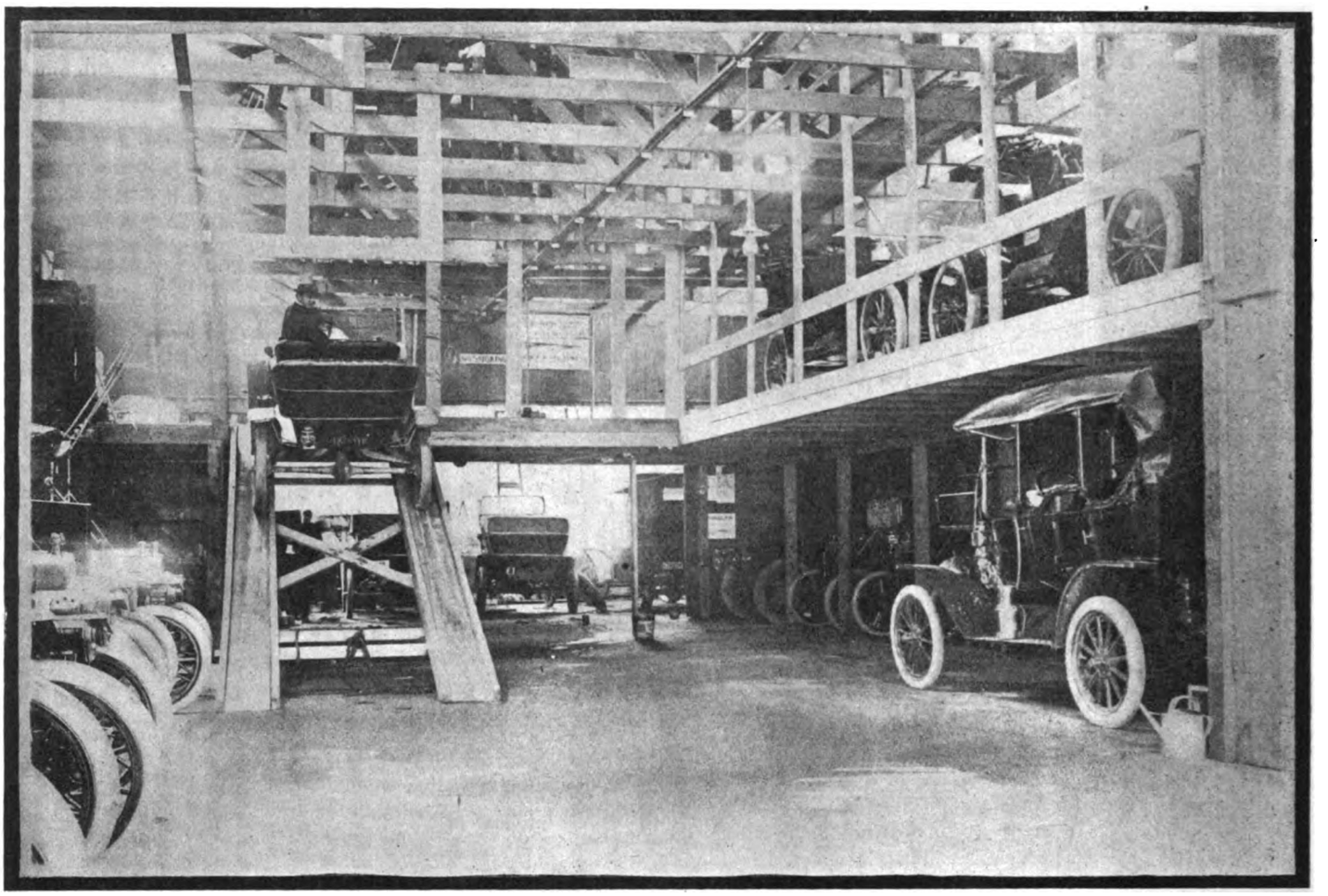
To Determine "Squareness" of Pistons.

Though it is absolutely essential to the proper operation of an engine that its pistons be lined up "square" with the crankcase, in order to minimize wear, at factories there are a number of methods in use for determining their squareness, such methods scarcely are suitable elsewhere. It is a simple matter, however, to make sure that pistons are square by placing a straightedge between the lower edge of the piston and the crankcase, first making sure, of course, that the surface of the crankcase is perfectly clean. If the piston is not square, the discrepancy will show if a light is held behind the straightedge. Each piston will require to be treated separately and the amount of error in each should be determined before any corrections are made.

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INCREASING SPACE WITHOUT ENLARGING GARAGE

How One Dealer Met the Requirement for Greater Storage Facilities by Erecting a Hanging Gallery Within His Premises—Inclined Runway That Serves a Dual Purpose.



SIMPLE METHOD OF GAINING STORAGE SPACE ON SAME GARAGE AREA, SHOWING RUNWAY LEADING TO GALLERY

Though the problems of the automobile dealer located in the West, on the Pacific Coast, for instance, are in many respects similar to those which have to be solved by the Eastern dealer, there are several phases of the situation which are peculiar to each. With but few exceptions the really big automobile manufacturing centers are located on the Eastern side of the United States, and the dealer thus is in close touch with the factory which he represents but there must of necessity be longer breaks between correspondence, and particularly between car shipments, in the case of the Western dealer.

This unalterable situation requires that the Western dealer carry a large stock and perforce provide considerably more storage space for cars to meet his demands. In order to be prepared for just such a demand, the arrival of which no man can foretell, the Western dealer must provide more ample storage space—and generally he must do so on the same capitalization as the Eastern dealer.

In this respect, the truth of the time-worn old saying to the effect that where there is a will there is a way has on more than one occasion been proven in the Western agency business. It is possible, for instance, where additional floor space cannot be obtained, either because it is unavailable or because its cost is prohibitive, to erect a gallery around an existing store-room and in this way practically double the floor area at a comparatively small expense. Which, briefly, is exactly the plan that has been adopted by McCabe & Brentnor, distributors of Ford cars in San Diego, Cal. The arrangement of the reconstructed garage is clearly shown by the accompanying picture.

The gallery is supported by means of steel rods from the ceiling, supplemented by heavy timbers resting on the floor, and the improvised structure affords a considerable increase in storage space. The cars are placed in their temporary resting places with the aid of an inclined runway, and, despite its steepness—the grade measures out at 43.52 per cent.—they are driven up it under their own power. Incidentally, the runway serves as a convenient test hill to demonstrate to purchasers the hill-climbing ability of Ford cars.

Penetrative Properties of Kerosene.

The power of kerosene to penetrate between metal surfaces that are in contact is surprising, but it requires time, and if sufficient time is not allowed no good results can be expected. Soaking for several hours generally is necessary.

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GARAGEMAN WHO ADMITS HE'S MAKING MONEY

Says the Garage Business is Not Necessarily a Losing Venture—Recommends Watchfulness in Credits as One Essential—"Gasolene Discount" and Other Methods He Employs.

If asked, probably a large majority of the garagemen in New York City would second the sentiments expressed at a recent dinner of the New York Garage Association, when several speakers declared in open meeting that they were not making money; but Earl D. Wright, proprietor of Wright's Garage at West 158th street, Riverside Drive and Audubon place, admits that he is making a living and also putting aside something for a rainy day. In fact, Wright at the meeting in question arose and in substance said: "What's the use of saying we are not making money when we are? I am making a little money, but I want to make a little more. That's one reason why I'm here to-night."

Business Man First of All.

Wright, when a Motor World man called at his garage this week, said he meant what he said at the meeting but did not think it was particularly wonderful that a garage should make money. This latter part of his assertion may be the cause of some raising of eyebrows among those garage owners who declare life a financially profitless existence, but before anything is said about Wright's methods the whole story may be explanatorily prefaced with the statement that Wright is a business man in every sense of the word who before opening his garage, a year ago, had spent a dozen years in mercantile pursuits in the metropolis.

Many Cars Pass the Door.

His establishment is a two-story brick building which occupies the point of a triangle formed by West 158th street, Audubon place and Broadway, while a few feet distant is Riverside Drive. Last week a multitude of sailors from the fleet of battleships anchored in the Hudson River passed his door every day, but they were not more numerous than the cars which daily make use of the drive. This passing trade, however, is not the source of the garage's income; the profits come from the regular run of city garage business, storing, supplies, repairs, etc .

Capacity for Eighty Cars.

Although it has but the two floors, the garage can store 80 cars. One reason for the advantageous storing of such a number is the fan-like arrangement possible, the elevator being near the center of the base of a nearly isosceles triangle, the base being the longer of the three sides. Of course, this makes it necessary to place some cars in difficult corners or in front of others, but those which are left in the more difficult locations are those which are the least used; when they are to be used notice generally is given in advance, which permits their being ready by the time the owner is ready.

Space Economy Imperative.

An instance of the business training which helps make the garage pay is illustrated in a recent instance. Wright formerly had a storeroom for tires and supplies on the second floor at one end of the base of the triangle. He figured that room for the supplies could be found in a more convenient location downstairs, so he tore out the stockroom and made room for two small cars. This means $40 a month more without any increase in equipment, labor or rent. Also, instead of hiring a man to tear out the stockroom partitions Wright put on a pair of overalls and did it himself. The job performed, he cleaned up and went back to the office, the same business-like appearing manager he was before.

Bad Debts May Ruin Business.

He was asked what he regarded as most important in making his business pay.

"Following up credits," he promptly responded. "Bad debts," he added, "are the ruination of any business. You can go into some garages and look over the books and they look like ancient history. I have had but four accounts that I have failed to collect, and I expect to collect them. I apply a rule that used to appear on little blotters gotten out by a wholesale lace house with which I was connected for twelve years. It said, 'We predict failures; not notify you of them.' The interpretation is that the time to jog a man about his account is when he begins to grow lax, not to wait until he is so far in the hole that failure is almost inevitable."

Novel Gasolene Selling Plan.

Wright, like most other garagemen who attain to any success in the metropolis, insists that gasolene be purchased in the garage by the men who store with him. His price is 25 cents a gallon, a figure which may appear high to many owners, but it is subject to an arrangement whereby prompt payment of the monthly bill secures a price of 22 cents. Thus, a man who stores with Wright, provided he pays the storage and supplies bill by the 5th of the following month, is charged but 22 cents for "gas." If a man uses only 40 gallons a month, prompt payment saves him $1.20.

If he does not pay he is billed by the 10th, and if the account is not adjusted by the 15th the garageman begins to investigate. If necessary the car is held in the garage until the bill is paid. Several cars have been so tied up to secure an adjustment of accounts, but Wright states that never has he lost a customer because of this policy. They seem to appreciate being made to keep up.

Rates Not So High As Downtown.

Prices in Wright's garage are somewhat lower than they are further downtown. He is in what is known as the Washington Heights section and states that the class of owners in his locality are not so wealthy as those further downtown. His lowest rate is $20, this being for the smaller cars. From this figure the storage rate runs upward to $35 and $40, which is asked for the large limousines. The ordinary five- and seven-passenger touring cars are admitted at $25 and $27.50. These rates prevail in the eight or ten garages which are in the Washington Heights district.

Has Co-operative Scheme.

Supplementing his gasolene discount arrangement, Wright already has under way a scheme for co-operation among the garages in his section. He himself is a member of the recently formed New York Garage Association, but he believes small groups within the parent body can accomplish much good. He therefore is forming what may be called the Washington Heights Garage Association to protect credits and ensure against loss from bad debts. Although New York City is vastly different in many respects from almost any other city in the country, Wright's credit scheme is easily adaptable in any city or village which

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has five or six garages or from that number up.

His idea is to form what is commonly termed a "blacklist," although a less harsh sounding name might be more desirable. If a man stores with Wright and leaves under circumstances which caused him to be termed undesirable, his name will be written on a sheet of paper and this sheet will be passed on to the next man in the local association. The second man will copy the undesirable's name on a private memorandum and, having added any undesirable he may have, he will pass the paper on to No. 3. No. 3 will copy what No. 1 and No. 2 have written and will pass it to No. 4. When the paper again reaches No. 1 he will tear off the names he had entered, everyone having seen them, and the next week will start the sheet again, adding at the bottom his new undesirables. Each week the paper will follow the same course, and when it reaches a man he will add his new undesirables and tear from the top of the list the names he wrote upon it the previous week.

Neither is there any chance of a man's account being lost in the shuffle in Wright's office. There is no shuffle. The accounts are kept in original and carbon in a loose-leaf book, and when billing time comes one copy is sent to the owner. When the bill is paid the other copy, which is of a different color than the first, is removed from the loose-leaf book. A mere rapid turning of the leaves serves to show if any bills remain unpaid.

The "blacklist" scheme has been in use for some time in an unorganized way on Washington Heights. Only a few days ago a man, whose name may be the traditional and well-worn Smith, left the Wright garage declaring that he would not pay 25 cents for gasolene when he could buy it elsewhere more cheaply. To this arrangement Wright agreeably acquiesced, but told Smith he doubtless would have difficulty finding a garage where he could secure storage apart from the purchase of fuel. Smith, however, declared he would take his chances. Wright knew, from his association with other local garagemen, that Smith had stored in several Washington Heights garages and had left because of this same trouble. He therefore was sure Smith would go further downtown, in the direction of Harlem.

Wright has quite a number of good friends in the Harlem district, and accordingly telephoned to one that Smith had just left and might be down that way looking for storage and probably would fail to make any extensive purchases of gasolene at the garage. When last heard of Smith had been turned down at one or two garages, and by this time probably has located with a garageman who is not within the circle of co-operation. With such a system in rigid working order the garagemen would be fully protected from taking customers who are likely to cause regret on the proprietor's part.

Firm handling of business matters and strict attention to business has made Wright's establishment as popular as any of those in his section. Figuring things down to a business basis and then seeing that the garage gets every cent it is entitled to are secrets to his success. Just how much money Wright is making he declined to say. He was asked if his investment was paying 6 per cent., and he smilingly said, "Yes, I think I can safely say it is paying 6 per cent."

The expenses include Wright's salary. Figuring an investment was a bit difficult, for when Wright started in business the location was new for a garage and he had little to invest outside of his lease. His true investment, however, now may be said to consist of the value of his business, the reasonable price at which he would sell it were he to dispose of it today.

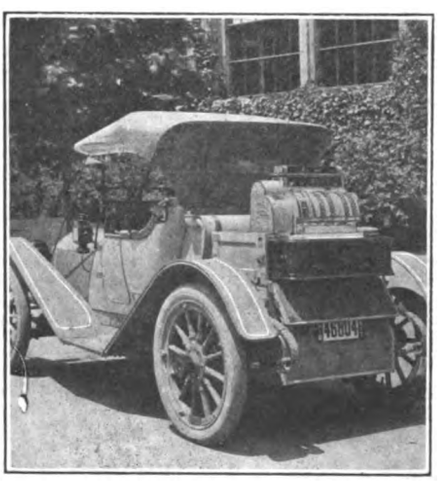
Accessories is an item which adds to the profits, although there is a wide field for improvement. At present such goods are displayed in a showcase in the office, whereas were they exhibited in a spot where they were visible to and had to be seen by every owner who entered the garage or by the thousands of motorists who pass the door, there would be greater knowledge of the fullness of the line carried. It is complete in that it consists of the articles which are in daily call among owners of cars, but as compared with those garages where the display is more pronounced the appearance of the stock indicates that its prominence is not sufficient, nor even just to the stock itself.

Knob that Indicates Position of Wheels.

Indicative of careful attention to detail and unusual forethought regarding the operation of their vehicles, the manufacturers of Siddeley-Deasy cars, which are British productions, have adopted a novel method of making plain to the driver the position of the steering wheels, and it is so simple that the method may be modified to be applicable to any car. The method consists of inserting in the steering wheel a small "ivorine" knob the position of which indicates the angularity of the steering wheels. For instance, if the wheels are straight, the knob will be at the lowest point in the periphery of the wheel; turning the steering wheel so that the white knob is either to the right or the left, indicates in which direction the wheels are pointed and approximately their angularity. The usefulness of the device is apparent in garage maneuvers when the fenders obscure the wheels. A piece of string tied around the steering wheel, or even a small nick filed in it, would serve the same purpose and probably would save much confusion and prevent the car being damaged.

Car that Aids Sale of Cash Registers.

The enterprise which has characterized the National Cash Register Co., of Dayton, O., and which has given the sales force of



that company an enviable reputation, has found further field for operation in the designing of a motor car which is especially equipped for use by the cash register salesmen. The car is a Republic roadster of standard chassis, but upon the rumble deck is bolted a trunk capable of containing the largest size of register made by the company, as shown by the accompanying illustration. Beneath the trunk is a drawer four inches deep in which advertising matter may be carried. Under the front seat is a drawer for the automobile and cash register tools. With this equipment the merchant to whom access is difficult is no longer immune from the invasions of the N. C. R. salesmen.

Safety Spark Gap May be Abused.

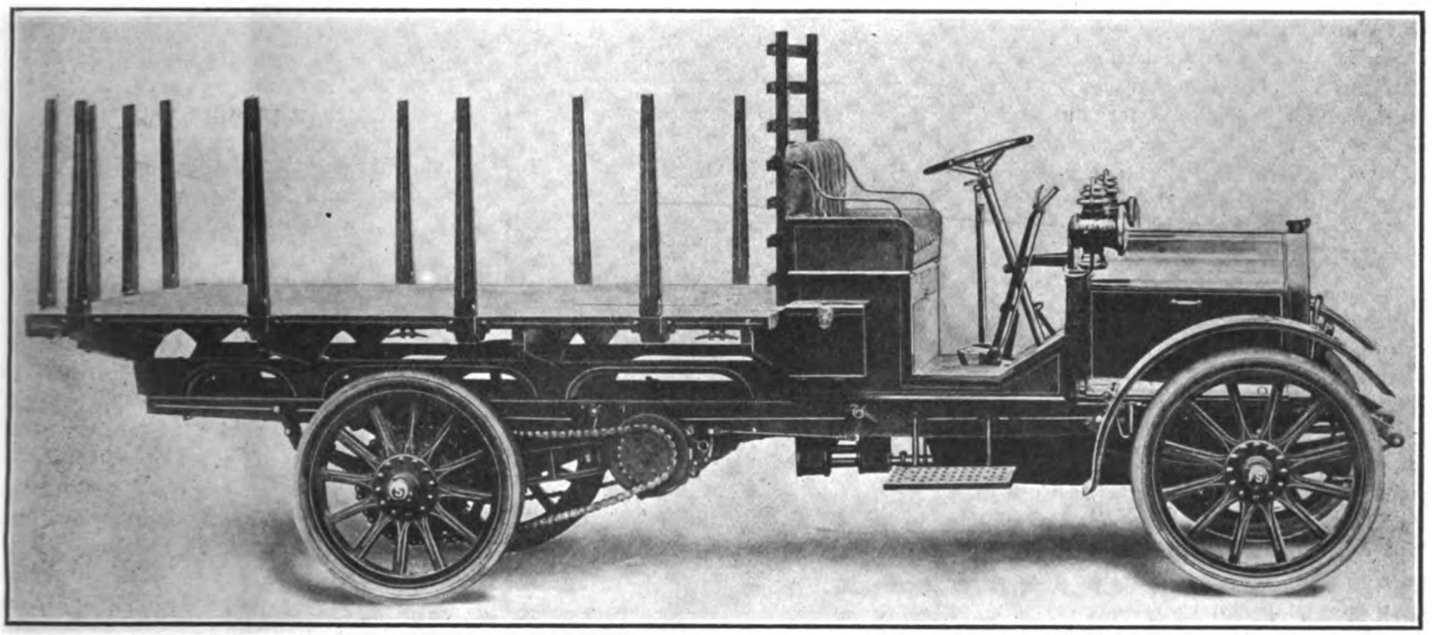
Although the safety spark gap in a magneto is put there for a definite purpose, which purpose is to protect the comparatively delicate windings of the instrument in the event of short circuits or broken high tension wires, the spark, nevertheless, should not be permtited to cross this gap for any length of time if it is avoidable. The high tension spark is a hot spark and it tends to burn away the terminals. If the terminals are burned away ever so slightly, the safety spark gap will be too wide properly to fulfill its mission in life.

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NO RADICAL FEATURES IN SELDEN TRUCK DESIGN

New Vehicle for Which Easy Payments Will Be Accepted Is Standard—Long Stroke Block Motor Employed.

Unusual interest attaches to the new Selden truck, manufactured by the Selden Motor Vehicle Co., of Rochester, N. Y., and sold by a separate organization, the Selden Truck Sales Co., if for no other reason than that it is the first commercial vehicle to be built by the Selden company and the first that has been offered by a well known concern on the easy payment plan; moreover, the vehicles are sold direct from the factory without the intervention of the usual agents, which is another innovation of more than passing interest.



NEW SELDEN ONE-TON TRUCK EQUIPPED WITH PLATFORM STAKE BODY

Following well established precedent, but one model will be turned out, the policy of the makers being the concentration of energies on a single type. The new Selden truck has a carrying capacity of one ton and is propelled by a four-cylinder motor rated at 23 horsepower. Left-hand steer, center control and a governor which limits the road speed to a maximum of 16 miles an hour are among the features of the car.

The frame is low hung, and when the truck is carrying its normal load is only 29½ inches from the ground. As the wheels are 36 inches in diameter, the frame is below the tops of the wheels; if the body is carried directly on the frame its maximum width outside is 46½ inches. By using a 3-inch bolster or sub-sill to raise the body above the level of the driving chains the maximum width can be increased to 52½ inches, while a 10½-inch bolster will raise the body high enough to clear the wheels under all conditions, so that it can be made of any width desired. The length of the loading space normally is 8 feet 6 inches.

In the construction of the motor the unit power plant plan has been adopted, the gearcase being bolted to the rear end of the crankcase. The cylinders, which are block cast, have a bore of 3¾ inches and the piston stroke is 5¼ inches; this long stroke is considered especially advantageous in commercial motor vehicles because of its efficacy in making hard pulls at low speeds. Under the control of a sealed governor the motor has a maximum speed of 1,150 revolutions per minute, which corresponds to a road speed of 16 miles an hour on the high gear. A dual ignition system is employed, a peculiarity of which is that the magneto is driven at the same speed as the crankshaft. A positively driven gear pump circulates the cooling water through a vertical tube radiator.

Transmission of power is through a multiple disk clutch, three-speed gearset and jackshaft, with side chains for final drive. The gearset provides for three speeds forward and the usual single reverse, selectively controlled; gears and shafts are of heat treated nickel steel and the shafts run in Timken roller bearings. The clutch is of the dry disk type. There is a single universal joint in the short shaft between the tail-shaft of the gearset and the jackshaft. Special construction has been employed to make the binding or straining of the jackshaft in its bearings a practical impossibility in case of the distortion of the frame due to abnormally rough roads. Spherical boxes are mounted in spherical sockets on the frame, and the boxes carry the Hyatt roller bearings in which the jackshaft runs. Frame twisting can have only the effect of turning the spherical boxes slightly in their sockets, permitting the roller bearings to adjust themselves accurately and automatically to the changes in the relative positions of the frame members. The differential on the jackshaft is of the approved bevel gear type; drive shafts, of heat treated alloy steel, are 1⅜ inches in diameter.

Both front and rear axles are steel forgings, heat treated. The front axle is of the familiar I-beam cross section, 3 inches deep and 1⅜ inches across the flanges, with a web thickness of ⅜ inch. The rear axle is a solid rectangular forging 2¼ inches deep and 2 inches thick. There are 12 2-inch hickory spokes in each of the 36-inch artillery wheels; solid rubber tires are used all round, 3½ inches wide in front and 4 inches wide on the rear wheels. All rims are S. A. E. demountable. The tread is 56 inches for the front wheels and 60 inches for the rear wheels, and the wheelbase is 125 inches.

A good, substantial depth of 5½ inches is a characteristic of the pressed channel steel main frame, which is designed to carry real loads. The front cross member is detachable, so that the unit power plant can be removed bodily in case of emergency, to the great facilitation of repair work. The rear end is protected by a stout steel bumper. Ample length, as well as ample weight, is given to the springs, and the car should be an easy riding one for its kind. Front and rear, the springs are semi-elliptical; in

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front they are 42 inches long and 2¼ inches wide and in the rear 48 inches long and 2½ inches wide. No driving stresses are transmitted through the springs, heavy radius members being provided to take the thrust.

Worm-and-nut steering gear is employed, with a hand wheel 18 inches in diameter; this gear is, of course, irreversible. Gasolene is carried in a drawn seamless steel tank, tinned inside and out, located under the driver's seat, having a capacity of 23 gallons. Without load the car weighs 2,900 pounds. The price is $2,000. The equipment consists of a horn, three oil lamps, jack and set of tools.

Blocking out Clutch to Avoid "Freezing."

If a car is to be allowed to stand idle for more than a month it is a wise plan to block out the clutch by inserting a piece of wood between the pedal and the heelboard, and thus prevent it becoming frozen." The pressure of clutch springs varies, and what may appear to be a "soft" spring in reality may be the very reverse, as the question of leverage of the withdrawal gear may deceive the operator.

First slack off the spring and then insert a piece of wood of suitable size. If this is not done, the clutch may "freeze up" during the period of idleness. This is particularly true of dry plate clutches and plate clutches in general. Leather cone clutches have been found to suffer through having a rib formed on the outside edges preventing the total engagement. If leather clutches are blocked out a good soaking with pure castor oil will tend to restore life to the fibers of the material, care having been taken first of all to wash away any foreign matter with gasolene

Long Plugs for Hard-Starting Engines.

A motor that is difficult to start sometimes can be made an easy starter by using long spark plugs which will cause the spark to occur deep in the mixture in the combustion chamber. Care should be taken that the plug does not interfere with the piston head, if the clearance is small.

Simple Lock Washer for Temporary Use.

A lock washer that will work fairly well for a short time can be made of a common iron washer by making a number of radial cuts in it with a coldchisel and also nicking the bottom of the nut. This is merely a temporary expedient, however.

Effect of Quenching Heated Metals.

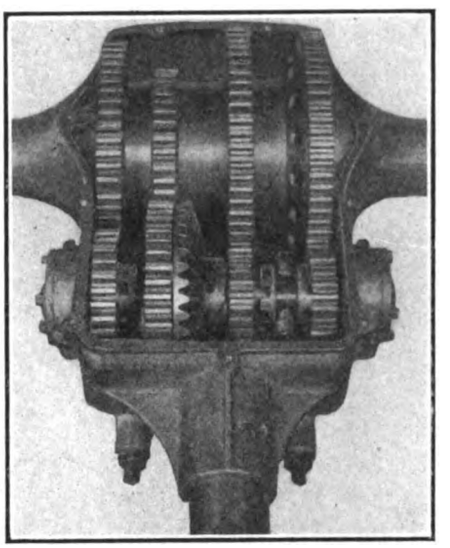
Steel and brass are affected oppositely by heating and sudden cooling in water. Steel is hardened in this way, but brass is made softer, as is also copper and German silver.

COMBINED AXLE GEARSET WITHOUT SLIDING GEARS

Dog Clutches That Make for Quietness Feature of Bennett's Device—Case-Hardening Obviated by Position of Pinions.

The trite old saying to the effect that in the making of books there is no end might almost and with equal aptness be applied to the construction of change gear mechanisms; for there are few who are entirely satisfied with the present types of sliding gearsets, despite their satisfactory operation in most hands.

The Bennett rear axle gearset which is illustrated herewith, and which is the invention of Stephen S. Bennett of 216 Fairview avenue, Chicago, Ill., represents the latest development and, unlike many others, it would seem to hold real promise, for it not only works, and works well, but is comparatively cheap to manufacture and presents few engineering difficulties. The device, incorporated in a Packard car, was demonstrated to a Motor World man, and during the course of the demonstration it was made very plain that it not only is feasible and quite easy to change from any gear to any other gear while the car is running, but that the operation is noiseless. Which, briefly, is the principal claim made for the device by its inventor, this and other claims being covered by letters patent numbered 1,014,036.



BENNETT'S AXLE GEARSET

The general design of the device may be seen from the accompanying illustration, which shows that the whole gearset is incorporated in the rear axle housing with the differential mechanism, and is not, as is the case with so many other axle gearsets, contained in a separate housing bolted to the differential case. Its comparatively small size, which, of course, also means light weight, accounts for its construction. The driving gears, which are four in number, are mounted loosely on a transverse shaft and are constantly in mesh with the driven gears, which are solidly keyed to the driving axles through the intermediary of the differential mechanism. By reason of the fact that the gears always are enmeshed, there can be no clashing and wear when speeds are changed, all the wear coming on individual dog clutches. These clutches are shifted by means of the orthodox side hand lever and serve to key their individual pinions to the transverse shaft, which is driven by means of the usual bevel gears.

It is pointed out by the inventor that as all the drum or driven gears are considerably larger than the driving gears, the strain and wear between them is equalized to a greater extent than it is in the usual gearset and that the resultant drive is much akin in effect to the drive by side chains. Incidentally, as the driven gears are behind the driving gears they quite naturally rotate at speeds one-third to one-fourth less, depending on the gears in use, than the peripherial speeds of ordinary gear wheels in the usual gearset. One of the features that would seem to bear out the inventor's contention that wear is much less with his gearset than it is with any other of the ordinary pattern, is the fact that they are not case-hardened, he points out, reduces considerably the cost of manufacture. Summarized, in the words of the inventor, the advantages of the gearset are: Increased durability, increased simplicity, greater ease of operation and low cost of manufacture.

Why Radiator's Water Should be Changed.

Everybody knows that water pours more freely than molasses, but few motorists from one year's end to the other think of drawing the water from the cooling system. Unless cleaned periodically locomotive boilers "furr up," and the cylinder jackets of the gas engine, as well as the radiator and water pipes, are affected in a similar manner. The rubber hose connection becomes rotted inside, and cases are not hard to find where these burst, simply due to rot. Radiator bases readily adapt themselves as receptacles for mud, and instead of a free passage for the water to flow, the chambers become constricted, throwing an unnecessary amount of work on the pump, if such is used; or, in the case of thermo-syphon cooling, minimizing the efficiency by 30 to 50 per cent. Before using anti-freezing solution a thorough cleaning of the circulation system is necessary.

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ELECTRIC LIGHTING SYSTEMS—THEIR WORKINGS

Use of Combined High Tension Magneto and Generator Explained—Magnetic Regulator and Its Function—Locating Possible Causes of Trouble—Excessive Current Obviated by Fuses.

(This is the fourth of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render easier their care and repair by dealer and owner alike.)

It is altogether probable that if the old methods of ignition of automobile engines by means of hot tubes and other equally crude and objectionable systems still obtained, electric lighting systems still would be a dream of the future. But with the development of ignition systems to their present state of high efficiency, it has been demonstrated that electricity can be put to many other uses as well, and it scarcely is less the necessity for electricity for ignition than it is the convenience and dependability of electric lights that has within the past few years so stimulated the development of lighting systems.

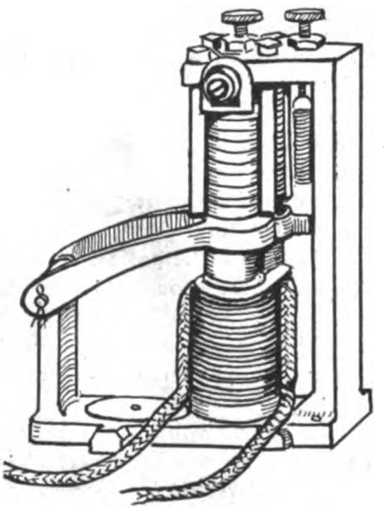
Idea of Complexity Exploded.

The continued success of the high tension ignition system, in the face of one-time criticisms to the effect that its complexity would serve as an effectual bar to its general adoption, has served also to demonstrate that, after all, electricity is not such a terribly mysterious and subtle fluid and that, with the help of even average intelligence, its way can be made the will of whosoever wishes. All of which has been made very plain in the three preceding articles which have appeared in Motor World, and in which have been laid bare the secrets and "mystery" which is no mystery at all, of a number of modern electric lighting systems.

Double Purposes That Are Served.

As has been explained, high tension current and low tension current are quite different in their characteristics. High tension current is used for ignition purposes only—low tension ignition of automobile engines being practically obsolete—and is low tension current "stepped up" by means of a transformer until its voltage is very high, though its amperage is so low as to be scarcely measurable with ordinary instruments. Low tension current is the base which invariably is used in producing high tension ignition current. In many of the modern magnetos the transformer coil is incorporated directly in the instrument, which thereby becomes to all intents and purposes a high tension instrument. In others, the transformer coils are located in a box on the dash with the contact breaker and the distributing mechanism on the magneto, and these also are styled high tension instruments, though in any or all of them low tension current must first be generated.

Of course, where an electric lighting dynamo forms part of the equipment of a car it is a simple matter to utilize some of the current generated for ignition purposes by the simple expedient of passing it through an individual induction coil and a distributer. So far as is known, however, there are only two manufacturers who attempt to combine the high tension magneto and the lighting generator in the one instrument, which is complete in itself, together with a suitable dash coil, for either purpose. Of these two, only one, the Remy Electric Co. of Anderson, Ind., is an American manufacturer regularly engaged in the production of instruments for the market. The other, which is the British Simms company, is a foreign firm that has developed a combination instrument utilizing two separate and distinct armatures rotating within the same field, one armature for the ignition circuit and the other for the lighting circuit.



REMY MAGNETIC CONTROL

Regulation Effected by Combined Fields.

The Remy instrument truthfully may be styled a combined high tension magneto and low tension lighting dynamo. The low tension current is generated in a drum-wound laminated iron core armature rotating in a field composed of permanent magnets supplemented by an electro-magnetic field formed by a shunt field winding around the permanent magnets. The magneto portion of the instrument is orthodox in every particular and consists of the usual contact breaker and distributer gear attached directly to the magneto and actuated by the armature shaft. The transformer coil is located in a coil box on the dash.

In the lighting portion of the instrument the initial current is generated by the armature rotating in the field of the parmanent magnets. As the current strength increases, part of it is passed through the shunt winding, thereby strengthening the field and thus increasing the current output. The method of regulating the output is ingenious and consists of varying the strength of the shunt field through the action of a magnetic regulator formed of an armature, a coil in which the armature operates, and a pile of carbon disks one upon the other. When the engine is idle, the pressure upon the carbon disks is such that they become virtually a solid conductor, permitting all the current to pass through the shunt field.

Carbon Disks Control Field Strength.

As the speed of the dynamo armature increases, however, the electro-magnetic regulator, which is connected in series with the shunt field, decreases the pressure on the carbon disks, and as they loosen, under the action of a spring, their resistance becomes greater and the strength of the shunt field is decreased. In action, the regulator is automatic and compensates for engine speed fluctuations by maintaining the magnetic field of the dynamo constant so that the current output of the machine never exceeds eight amperes. The same device—it is mounted in the coil box on the dash, where it is instantly accessible—also serves to disconnect the generator from the battery immediatealy the engine is stopped, in which case the lighting load automatically is taken up by the storage battery, which in the lingo of electrical engineers is "floated on the line."

Simplicity a Characteristic.

Despite the manifold functions of the Remy instrument, it is little, if any, more complicated in structure than any other lighting dynamo, and its installation and

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care require no special knowledge of electricity. The instrument is designed to be run in either direction—clockwise or anti-clockwise—though when it is run clockwise the green-red "jumper" wire should be connected to the brush holder marked No. 1 and the red "jumper" wire to brush holder No. 2. If it is to be run in anti-clockwise direction the connections should be reversed. It is difficult to conceive that trouble with the wiring connections could manifest itself, for with each instrument is supplied a complete wiring diagram on which the various wires are marked in color to correspond to the color of the wires themselves. It is merely necessary to connect the colored wires to the terminals indicated on the wiring diagram.

Attention That Nets Perfect Results.

Failure to generate could only result from improper wiring connections or a poor condition of the brushes or commutator caused by wear or lack of proper lubrication. Occasionally the commutator should be cleaned by pressing very fine sandpaper lightly against it, and it will do no harm to apply a minute quantity of good quality vaseline to it while the instrument is running. No oil should be used on the commutator nor should the usual lubricating greases be used upon it. As a last final injunction, it is absolutely essential that a storage battery be used with the instrument. The instrument cannot be used without one, and only the battery specified by the Remy company should be used, for repeated tests have shown that only one style of 6-volt 120-ampere hour capacity lead plate battery can be expected to give good results.

In the Remy system the current output is controlled by means of a mechanical regulator, and a somewhat similar mechanical device is employed in the Adlake system, which is manufactured by the Adams & Westlake Co., of Chicago, Ill., though the dynamo and, in fact, the whole system, is entirely different in theory. The Adlake machine is a straight shunt-wound dynamo in which permanent magnets find no place. The field pieces are electro-magnets.

How the Adlake System Differs.

The complete system includes the dynamo, the Adlake-Newbold regulator, which governs the dynamo output, and a storage battery. In general construction, the Adlake dynamo differs somewhat from other dynamos, though its component parts are the same and in general the same instructions regarding upkeep apply to it as apply to others. By simply removing a small wing nut the aluminum cover may be removed, disclosing the interior mechanism and the brushes, holders and commutator. The brushes, it may be noted, bear on the commutator at a slight angle favoring rotation, and in removing and replacing them care should be taken to see that they are put back properly, or damage to the commutator will result.

In caring for the dynamo, it is well occasionally to wipe out the inside of the case with a clean cloth moistened with gasolene. The brushes also may be removed and cleaned, though if they have been run for some time their adjustment should not be altered for the reason that they are self-hardening with wear, and after a short use the springs seldom, if ever, require adjustment. The same cloth will serve to remove such dirt as may have collected on the commutator. The commutator should present a smooth, hard surface of a dark brown color when in the best of condition, and if it should show signs of scratching or pitting, such marks should be removed by holding fine sandpaper against it until they disappear.

Brush Adjustment an Important Point.

Naturally the brushes will wear out in time, and when they so they should be renewed. When the tension levers commence to touch the box in which the brushes slide, it is time to put in new brushes. The machine should not be run as long as it will run and generate current without attention to the brushes, for the greatest damage is done to commutators when the brushes are just too short to make perfect contact and still are not short enough to prevent the generation of current. When they are in this condition they cause undue sparking, and as a result the commutator wears rapidly.

The current and voltage regulator is an ingenious device, which, nevertheless, is quite easily understandable in construction and operation. Mounted on the same panel with it is the automatic circuit breaker, and this also is ingenious in conception as well as positive in action. Briefly, the circuit breaker consists of two pairs of coils, one pair shunt and the other pair series. As the speed of the dynamo armature increases and the current strength becomes greater, the shunt coils are energized sufficiently to lift an arm, thereby connecting the dynamo to the battery. As the current flows from the dynamo to the battery it passes through the series coils, causing a greater pull upon the arm and making the contact still more effectual. At the instant the battery current becomes stronger than the dynamo current—when the dynamo armature speed is reduced as the engine is slowed down—the current backs up in the series coils of the circuit breaker and causes the arm to drop, breaking the circuit.

The regulator consists of a solenoid actuating an arm carrying a contact bearing on a series of other contacts, and operating through the resistance of a variable dashpot. The solenoid coil is placed in series with the field of the dynamo and, as the armature speed increases, more current is passed through the solenoid, which responds by pulling the contact bearing arm across the permanent contacts and thereby inserting steps of resistance in the dynamo field. In this way, the output of the dynamo is maintained constant regardless of the speed of the armature. By varying the weight of the piston in the dashpot against which the solenoid works, the current output of the generator can be varied within certain limits. There is a small cover over the dashpot, which, if removed, reveals a small cavity in the piston, which is partly filled with bird shot. Increasing the weight of shot increases the current output of the dynamo, for the reason that more magnetism then is required for the solenoid to lift the weight, and before the magnetism can be increased the dynamo output must be increased. In practice, however, just the reverse obtains. That is to say, altering the adjustment of the regulator automatically alters the output of the generator.

Care of Component Parts.

In caring for the regulator, the segments against which the sliding contact bears should be kept clean and bright and the spaces between them should not be permit-spaces between them should not pe permitted to fill up with dust and dirt. The movable brush should press firmly against the segments, and not more than one drop of oil may be placed on the pivoted bearings of the wheel about once in six months. One of the sure signs that the apparatus is working properly is that the arm will move up and down with variations in engine speed.

Functions of Fuses Made Plain.

Throughout the system, protection against short circuits is provided by means of fuses, and in case of failure to generate these always should be examined first to make certain that they have not "blown out." Of course, if they have "gone," current will not pass until they have been replaced with new ones. The reason for the fuse "blowing out" should invariably be discovered before a new fuse is inserted, for the fuse is a safety valve and serves as an indication that something is wrong. If the regulator arm should stick and the device become inoperative, permitting a very heavy current to pass to the battery when the engine runs at high speed, the main fuse will "blow." It is put there for that purpose. Or, if the automatic circuit breaker should fail to break the circuit between the dynamo

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and the battery when the engine stops, then the field fuse will "blow." The dynamo may fail to generate sufficient current because of the failure of the brush on the regulator arm to press properly on the segments. This would permit the resistance to remain in the field circuit all the time. Naturally, loose connections or a broken wire also will manifest themselves in a failure to generate or failure properly to light the lamps.

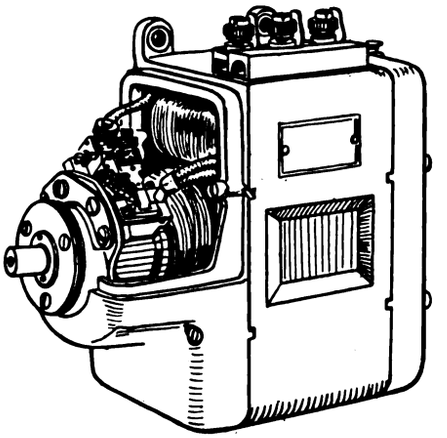
Protection That Fuses Afford.

By reason of the design of the system it is virtually self-protecting through the fuses. It is very unlikely that trouble of any kind will develop which will do other than cause the system to fail to generate current and thus allow the battery gradually to discharge itself. If, for instance, one of the wires to the battery should become loosened or broken, the regulator would become inoperative and this, in turn, would result in a heavy current being passed through the field fuse, which, of course, would "blow," thus protecting the dynamo. If the lights were connected they would flicker badly, due to the changes in armature speed, the output of the dynamo then being uncontrolled. Thus it may be seen that one kind of trouble almost invariably brings on another and that all trace upon the original one. It should be a simple matter to trace out the original fault and, once remedied, its location will serve as a guide in making subsequent searches. One of the principal points to watch in the Adlake system is the regulator arm. If this is kept in an operable condition through occasional inspection and attention the system will work properly and there is little reason to expect any great amount of trouble.

To those who have the courage to look the situation squarely in the face, without peering through a purely hypothetical fog raised by themselves alone, trouble must appear to be spelled "i-g-n-o-r-a-n-c-e." And though it has been said that a cobbler's children are always the ones whose shoes are down at heel, despite their father's intimate knowledge of the repair of shoes, at least the cobbler knows the parts that are most likely to wear and he can provide against it. Anyway, he can repair such breaks as occur. It is very much the same way with the modern lighting system. It is "O. K." when it comes from the manufacturer and it will stay "O. K." if it is properly installed and intelligently cared for. But—it can no more be properly installed than it can be intelligently cared for unless its construction is known.

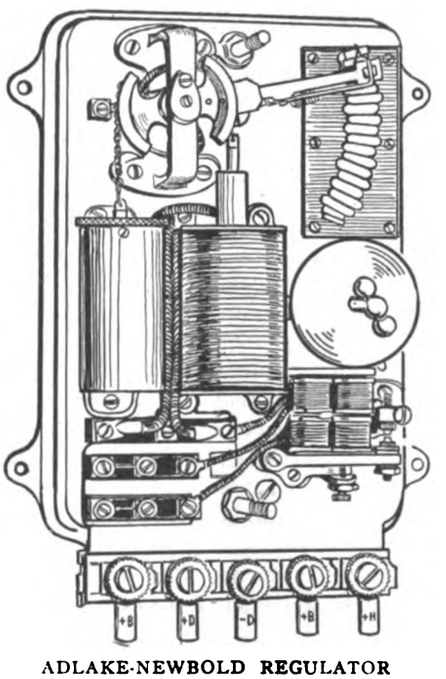
Similarity That Should Assist Learning.

Fundamentally, all systems are all very much alike. To know one almost is to know them all, though each has its peculiarities and each requires separate treatment to make plain its distinctive features. Still,



ADLAKE DYNAMO CONSTRUCTION

there are so many systems, and there is such very great variety in the method of establishing the proper relationship between the various component parts that it



ADLAKE-NEWBOLD REGULATOR

is beyond the scope of a single article to treat of them all.

Seeks to Assist the Breather Pipe.

Regardless of the popular assumption that the pressure in the crankcase of a four-cylinder four-cycle engine is no pressure at all, but is equalized through the "balancing" of the pistons, such is not the case, as a superficial examination of the conditions obtaining will make plain. Owing to the obliquity of the connecting rods during certain portions of the cycle, the pistons do not move up and down at equal speeds, and as a result the pressure in the crankcase is alternately slightly higher and slightly lower than atmospheric pressure, which fact is demonstrated by the alternate puff and suction at the breather pipe.

The breather pipe is put in an engine in order to permit this pressure to be equalized in so far as is possible, but that it serves its end with but mediocre results at best is the contention of a British expert who has developed what he styles a "vacuum suction valve" for insertion in the breather pipe. According to the theory of the device, which theory, it appears, will stand investigation, the "vacuum suction valve" operates to permit the increased pressure to escape but does not permit air to be drawn in through the breather pipe. As a result a partial vacuum is formed in the crankcase, and instead of the lubricating oil being forced out through bearings and valve tappets, the vacuum tends to draw it in and in this way to keep the engine clean and free from accumulations of road dust and dirt.

Measuring the Diameters of Tires.

Despite the widespread use of tires, there still exists confusion regarding manufacturers' methods of designating tire sizes. Briefly, a 36 x 4 inch tire, when fully inflated, measures 36 inches in diameter outside the casing between the point of road contact and the uppermost side of the tread. The sectional measurement—4 inches—also is taken to mean the actual distance between the outermost points in a section. Such measurements vary considerably, however, in the products of different manufacturers, which may perhaps account for the confusion that obtains. Thus, for instance, though tires seldom, if ever, are undersize, not a few makes are slightly oversize, and consequentiy their measurement cannot be expected to correspond exactly to the dimensions stamped on the tire. Diameter measurements never are taken at the felly band of the wheel, as sometimes is supposed to be the case.

Extemporizing a Pressure Feed System.

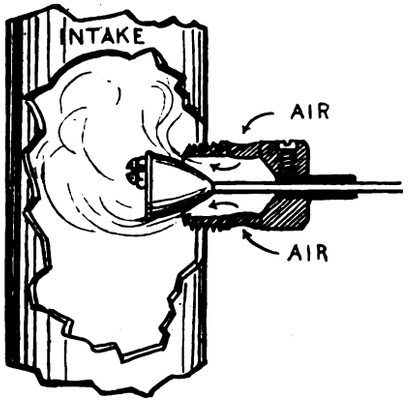
In the event of the exhaust pressure device in a pressure feed system becoming inoperative, and provided that the hand pump also is out of order, it still is a comparatively simple matter to raise sufficient pressure in the tank to start the engine. If the exhaust pipe is carefully plugged and the engine "spun" for about a dozen revolutions with the throttle wide open it then becomes an air compressor and compresses the air drawn through the carburetter in the exhaust pipe, the air first having passed through the intake and exhaust valves. The pressure in the exhaust pipe will be raised sufficiently to operate the exhaust pressure device and the air will pass through into the tank.

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Saunders Auxiliary Air Valve.

While simplicity is desirable in any mechanical device, it is especially important in auxiliary attachments, which are not part of the ordinary equipment of a car but are intended to be applied as extras. The fact that there are but two main parts to the Saunders gasolene saver is, therefore, a point very much in its favor. The attachment, which is the product of the Leslie R. Saunders Co., of 927 West Seventh street, Los Angeles, Cal., is of that type in which the mixture of gasolene vapor and air can be controlled as to its proportions by means of the auxiliary air valve, opening into the intake pipe, controlled from the driver's seat.

The valve itself is a simple brass cylinder in which are four air holes, and in it a conical plug which can be moved by means of a Bowden wire attached to the valve stem with an operating lever on the

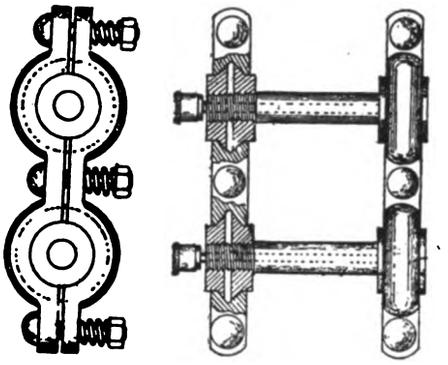


SAUNDERS GASOLENE SAVER

steering wheel column. By opening the valve the proportion of air in the mixture is, of course, increased and at the same time the mixture is made more intimate by the mechanical agitation resulting from the impact of the two currents coming together at right angles. The mixture can be made exactly right for the momentarily existing conditions, even if the carburetter does not give just the right mixture. With the throttle closed and the air valve open the cylinders will draw in pure air when the car is coasting, and by allowing air to be drawn in when stopping the motor the operation of a motor starter of the gas type is made more positive than if the cylinders contained an uncertain mixture of gas. The method of attaching the valve is as simple as the valve itself.

Spring Shackle That Absorbs Shocks.

To make one part or mechanism perform the functions of two and thus do away with superfluous parts has been the object of not a few motor car designers and not a few interesting devices have been the fruit of their labors. Recently the Cleveland Car Co., Ltd., Darlington, Eng., has placed on the market a new form of spring shackle which not only performs all of the duties of the older forms of such devices, but acts as a shock absorber as well. The device, as shown in the accompanying drawing, consists of the usual bolts which protrude through the eye in the end of the spring and the frame bracket, respectively. However, these bolts bear at either end short



CLEVELAND SHOCK ABSORBER

double cones. The links, which are split and "V-grooved" to fit over the cones, are bolted together by means of a trio of bolts provided with short but "stocky" helical springs, which squeeze the two halves of the links together with cones between them. Obviously, the friction between the cones and the links can be increased or decreased by altering the tension of the springs and the damping effects of the shock absorbing shackle altered to suit requirements.

"Creeper" That Facilitates Under-Car Work.

There is nothing that is much less inviting than the prospect of having to lie under a car when the garage floor is in the usual state of ooziness and dirt, to say nothing of its chilling temperature and dampness in cold weather. Too often the cushions of the car are used for the protection of the unfortunate worker, with dis-

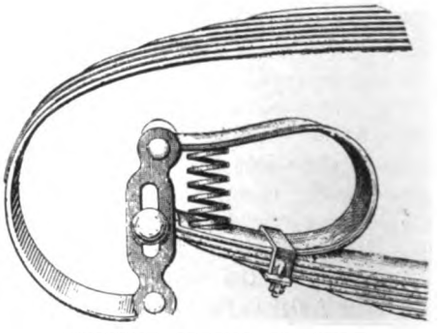


KEYSTONE SHOP CREEPER

astrous effect on the cushions. All such troubles are overcome and the comfort of the worker and his ability to do his work satisfactorily greatly increased by the use of the so-called "creeper," which consists of a very low castor truck upon which a man can lie. The one shown in the accompanying illustration, which just has been placed on the market by the Keystone Wire Matting Co., of Beaver Falls, Pa., is made of neatly finished hard wood, and is mounted on 1¼ inch steel wheels or castors running on ball bearings, so that shifting positions is an easy matter. The whole creeper is substantially built for hard service, being designed with every-day garage work in view.

Combining Shackle and Shock Absorber.

To permit free spring action at the time that the wheels are passing over rough places in the road, and to limit the spring action, or, in other words, to "choke" the rebound of the springs after obstruction has been passed over, is the object of a combined spring shackle and shock absorber of which A. P. Vincent, of Paris, France, is the inventor. As shown by the accompanying illustration, the device is charmingly free from complication. The links which connect the ends of the springs are slotted, and through the slots passes the bolt which fastens the links to the end of one of the springs. On the end of the lower spring, which is fastened to the shackle in this manner, is mounted a looped piece of



VINCENT SPRING SHACKLE

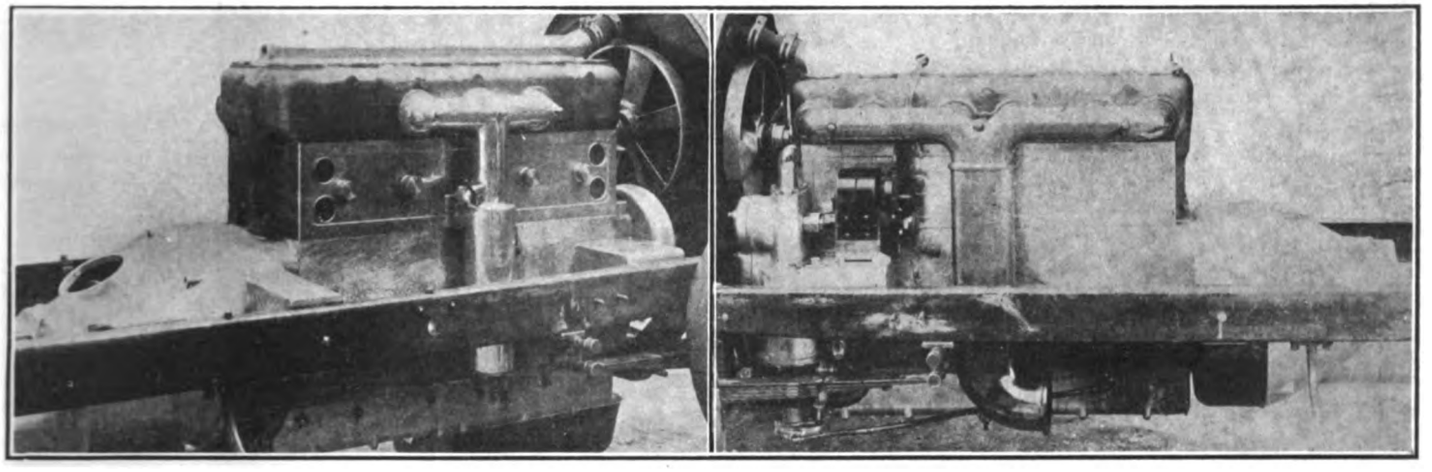
spring steel which is provided with an eye in the upper end, through which passes a bolt which engages with the upper holes in the links. Between the turned-over ends of the looped spring is mounted a short helical spring made of square wire. The upper spring is fastened to the links in the usual manner, with a bolt which passes through the holes provided in the links and through the eye in the end of the spring. The combined action of the looped spring and the short but strong helical spring supports the weight of the car when things are normal, and the bolt which passes through the slots in the links takes a central position. When, however, the wheels meet an obstruction, the bolt approaches the top of the slot and, if the shock imparted to the wheels by virtue of the speed of the car and the height of the obstruction is great enough, the main springs come into action when the bolt reaches the uppermost position. The recoil of the main springs is hindered by the bending action of the looped spring, which latter is held in position by means of a bridge clamp in the manner shown.

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UNUSUAL CONSTRUCTION IN "HIGHEST PRICED" MOTOR

Simplicity and Accessibility Paramount Features of Julian Engine —Has Six Cylinders and Long Stroke.

Although the design of the poppet-valve automobile engine has become almost thoroughly standardized through years of constant application, its construction and the methods of manufacture and the materials of which it is constructed are by no means standard. In these respects, the Julian Motor Co. of Syracuse, N. Y., though not attempting standardization in any form, would seem to have made a long step forward in both design and construction, for in the six-cylinder Julian motor, which shortly will be placed on the open market, the manufacturers have adhered very little to even such set practices as have become fairly common and instead have been active in seeking out brand new designs, new materials and new methods of construction. The concrete result is an engine which embodies the best points of the best designs, though at the same time it differs very greatly in many respects from the ordinary automobile engine.



INTAKE AND EXHAUST SIDES OF JULIAN MOTOR, SHOWING MANIFOLD CONSTRUCTION AND COMPACT DESIGN

As a matter of fact, the Julian engine is not an ordinary engine in any sense of the word; it really is extraordinary in both its design and its construction, though the plans that have been laid down are not such as to engender the slightest feeling of unrest regarding the operation of the completed machine. In developing the motor, accessibility has been the keynote of the design, and it is noteworthy that the theory behind the design has been adhered to even to the extent that the draughting room has been permitted to dominate the production department. In other words, no expense has been spared, either in design or construction, to make the motor as nearly perfect as human ingenuity and labor can be expected to make it, and as a result it is freely admitted by the manufacturers that the engine will bear the distinction of being the highest priced stock automobile motor either in the United States or abroad.

In conformity with the general tendency toward long strokes, and also to obtain the degree of flexibility and smoothness in operation which that type of motor permits, the stroke and bore ratio has been made fairly high. The bore is 4½ inches and the stroke is 7 inches, the ratio therefore being 1.55 to 1. The nominal horsepower rating is 48, though by reason of the valve design and the shape and construction of the intake and exhaust manifolds which have been designed to obviate the slightest possibility of "loading up" or choking, well over 100 horsepower is given off at 2,200 revolutions a minute, this figure having been obtained through an actual block test. At present the motor is constructed in only one style — six cylinder — though production plans anticipate the early addition of a four-cylinder model which will be practically a duplicate of the "six." The cylinder dimensions will be 3¼ x 6 inches.

In the six-cylinder model the cylinders are cast in a single block which is very nearly rectangular and is singularly free from projections. Both the intake and the exhaust manifolds have been made as short as is consistent and set close to the casting. The valves and the valve arrangement are peculiar and the design of the mechanism is distinctive. The valves themselves are exceptionally large, the heads measuring 3 1-16 inches in diameter, and the stems, which are no less than ½ inch in diameter, are hollow. The valve seat angle is 30 degrees, thereby providing, with ⅜ inch lift, a slightly larger opening than ordinarily would be possible. The valve heads are nickel steel welded to carbon steel stems. The push rods also are hollow, in order to obtain lightness, and instead of being round, as is the usual practice, they are made square. By way of ensuring perfectly accurate fit the push rods are subjected to no less than four processes before final assembly. They are first rough broached, then machine broached, then hand broached and then lapped in by hand. Quietness in the valve action has been obtained by preventive rather than by remedial methods. On the top of each push rod there is a tiny dash pot formed of a tight fitting metal cap which is ventilated at the sides. The effect of the dash pot is to prevent the valve stems from jumping and also to ensure positive lubrication of the lower ends of the stems.

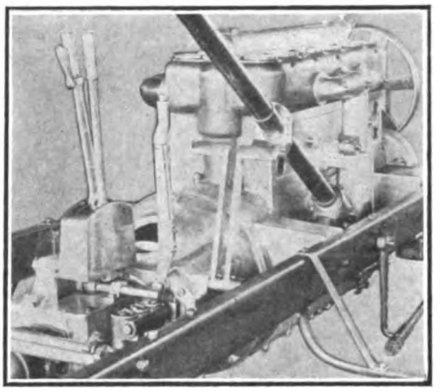
As an indication of the length to which accessibility has been carried, the camshafts, which are exceptionally heavy and are carried in bearings that are unusually liberal, may be removed from the front end without the necessity for disturbing the bearings or any of the other mechanism of the motor. The camshaft bearings are lubricated by means of small wells which are cast in the crankcase immediately above each bearing. They are kept full by splash, and the bearings thus are ensured of continual lubrication. Additional cams on the shaft, much smaller than the valve actuating cams, serve to raise the valves slightly and thus reduce the compression when the camshaft is moved forward bodily by means of a lever provided for the purpose. The whole valve mechanism is completely housed by means of two tight aluminum plates which extend the whole length of the crankcase and are held in place by means of thumb screws. The screened holes in the plates, visible in the accompanying illustration, serve to admit the air to the carburetter. As the air must pass nearly the length of the motor before it enters the carburetter it is effectually warmed and the homogeneity of the mix-

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ture is ensured without the necessity for water jacketing the carburetter.

Despite the size of the motor and the length of the stroke, the connecting rods are exceptionally light. They are of I-beam cross section and weigh, complete, just three pounds. The pistons, which are 6½ inches in length, also are very light, one piston with its wrist pin, complete, tipping the beam at 4¾ pounds. Each piston is fitted with three concentric piston rings and provided with several oil grooves which facilitate lubrication and reduce the tendency to smoke. Lubrication is entirely by splash, the connecting rod big end bearings dipping into small troughs which are fed from a reservoir in the crankcase. Small holes in the center of each trough maintain the oil at the proper level for normal motor speeds. As the speed is increased, however, the amount of oil fed into the troughs is too great to pass through the holes in the interval of time between the piston strokes, and consequently the supply of oil is increased. Baffle plates in the bottom of the crankcase prevent the front or the rear cylinders getting too much oil when the car is ascending or descending a grade, as the case may be. The several troughs are constructed in a unique manner that makes cleaning an easy operation. By simply removing two plugs, one at either side of each trough, a brush may be inserted and the whole interior swept out.

Cooling is effected by pump circulated water, the pump being located at the forward end of the casting on a vertical shaft, the lower end of which serves to actuate the oil pump. By reason of the proximity



JULIAN MOTOR IN PERSPECTIVE

of the pump to the casting, intake water pipes are unnecessary, the pump being connected directly to the jacket. The return water pipe is enclosed in an aluminum housing on top of the cylinders. A six-blade cast aluminum fan serves to induce a draft through the radiator.

The flywheel is housed in an integral extension of the crankcase and the clutch housing, enclosing a multiple disk clutch composed of 13 Raybestos faced and 14 saw steel plates, is bolted directly to the flywheel. The motor is supplied either with a change gear mechanism and control levers or without these parts. When a gearset is supplied it may be either three or four speed. Similarly, in the equipment of the engine the option is given of either an electric or a compressed air starter. The engine which is illustrated is equipped with the air starter. The system consists of a three-cylinder combination air motor and compressor and a tank. When the motor is to be started the compressor becomes an air motor, geared 17 to 1, and operates through the gearset, pressure being supplied from the air tank.

By way of emphasizing the extreme simplicity and accessibility of the motor, it is pointed out that through the whole construction but two sizes of nuts and bolts are used, thus reducing the requirements of the tool kit to but two wrenches. Another detail which is indicative of unusual attention to detail is the construction of the starting crank. The crank is mounted on a tapered shaft and its position may be shifted to any position relative to the compression stroke for easy starting.

AMERICAN CARS PROMINENT AT MELBOURNE'S FIRST AUTOMOBILE SHOW

Diversified Display of Products of Eight Different Nations, England and the United States Leading—Few Exhibits of Commercial Vehicles—Thirty-two Exhibitors Show Eighty-four Different Makes.

For a new institution, the Victorian Automobile Show, staged in the Exhibition Building, Melbourne, Australia, during the week of August 31 to September 7, under the auspices of the Automobile Club of Victoria, Ltd., loomed large. In all there were 84 different makes of pleasure cars exhibited by 32 exhibitors; also 10 commercial vehicles were displayed. Of the pleasure cars, 18 were of American manufacture; most of the others came from Great Britain. But one American commercial car was shown—a Sampson truck.

While in general the show had a British flavor, the decoration of the individual stands being left to the tastes of those who occupied them according to English practice, evidence of the American plan of preserving uniformity throughout the various booths was exhibited in the color scheme, which was limited to blue, gold and white, the colors of the Automobile Club. The usual complement of lattis work booths and myriad incandescent lamps added to the effectiveness of the show.

The American exhibits were confined to low and medium priced cars, and in each case save one—the Studebaker Corporation, which staged its own exhibit—the displays were made by Australian agents. Two dozen accessory dealers were on hand with a full line of products.

The American cars shown were: Stearns-Knight, Stoddard-Dayton, Warren, Lambert, Kelsey, Maxwell, Buick, Studebaker, Hupmobile, Chalmers, Overland, Ford, Marathon, Abbott-Detroit, Krit, Pullman, Cadillac, and Metz. The foreign cars on view were: Mors, Loreley, Sperber, Briton, Turner, Salmon, Mathis, Metallurgique, Belsize, Russell, Arrol Johnston, Lorraine-Dietrich, Nazzaro, Opel, Hispano-Suiza, Hotchkiss, Daimler, Austin, Delaunay-Belleville, Napier, Albion, Renault, Rolls-Royce, Minerva, Talbot, Wolseley, Vinot, Adler, Lanchester, Siddeley-Deasy, Gregoire, Le Gui, Fafnir, Dennis, Lancia, A. C., Clement-Bayard, S. C. A. T., Imperia, Vulcan, Sunshine, Argyll, Standard, Sunbeam, F. N., B. S. A., Mercedes, Berliet, Armstrong-Whitworth, La Buire, Singer, Martini, Adams, Thames, Excelsior, Delahaye, Brenna, Straker-Squire, Swift, Calthorpe, Darracq, Rapid, Roland, Bianchi, Hortu, Enfield.

The commercial vehicles exhibited were: Sampson, Lorraine-Deitrich, Lacre, Auto-Carrier, Karrier, Clement-Bayard, Commer, Thornycroft, Berliet, Hallford.

Dates Selected for Importers' Show.

January 2nd to 11th have been selected as the dates for the Importers' Salon which, as usual, will be held in the grand ballroom of the Hotel Astor, New York City. Of necessity, the show will not be a large one but, as heretofore, it will comprise the productions of at least five nations—England, France, Germany, Italy and Belgium.

Another American Car Enters Japan.

C. A. Pereira, of Yokahama, Japan, has secured the selling rights of the Halladay car for all of the Japanese empire and considerable contiguous territory. Pereira closed the contract with the Halladay people during a recent visit to this country.

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INGENUITY THE REPAIRMAN'S STOCK IN TRADE

Quick Thinking and a Varied Collection at the Bottom of the Tool Kit Work Wonders—Roadside Repair of a Broken Valve Lifter an Excellent Illustration of What can be Accomplished by a Handy Man.

Some repair shops are so situated that they get a large number of calls for help from more or less distant points, while others rarely hear from travelers in trouble; there are few, however, that are unfamiliar with telephone conversations that end with some such assurance as "All right; I'll send you a man. How soon? Oh, right away—just as quick as he can get his tools together." Which is a sure sign that someone is stranded on the road and can't get going again without assistance.

When Telephone Reports "Dead" Car.

The repairman who goes out on such a road job sometimes knows what sort of work lies ahead of him and can to some extent figure out his work as he goes to the scene of action; at other times he has not the slightest idea what he will have to do because the man who telephoned could give no more definite information than that the car was "dead."

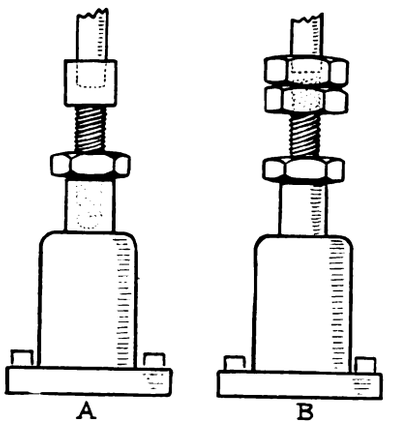
A little ingenuity on the part of the repairman and an appreciation of the utility of various odds and ends that form a heteroneneous jumble in the bottom of his tool bag are valuable assets in helping cars out of roadside troubles. There are dozens of things that can be used for purposes for which they never were intended.

Motor That Jerked and Died.

A concrete example will serve to elucidate the principle. The owner of a well-known and popular car, a man who enjoyed driving his own machine but had a decided aversion to doing any more adjusting and "fixing things" than absolutely was necessary, telephoned to his garage, which included a well equipped repair shop, and complained that he was several miles out in the country with two cylinders on strike. In reply to questions, he said that one cylinder commenced missing early in the day and gradually went out of business. Running home on three cylinders was not such a terrible prospect; but when another cylinder suddenly "died" and the motor started jerking along on only two, the agony became too great to be borne with equanimity, either by the man or the motor. Hence the call. He was pretty sure the first cylinder to go wrong was suffering from ignition trouble; but the plug was apparently all right and the owner's engineering ability did not permit him to go deeper. The other cylinder, however, had something the matter with one of the valves, which would not open. The owner didn't know just what the trouble was, and anyway it was pretty dark and he didn't want to mess around.

Trouble Readily Is Located.

Out went the repairman into the night. Arrived at the scene of the trouble, the



BROKEN VALVE LIFTER REPAIR

causes for the failure of the two cylinders to function soon were discovered. In one the high-tension lead had chafed against the sharp edge of a flange nut until the insulation had become just thin enough to permit the spark to short-circuit. A few turns of tape and the tying up of the wire to avoid further chafing put that cylinder in working shape again. The other cylinder, in which there was "something wrong with a valve," was not quite so easily put right, but the job was quite a simple one for the experienced trouble man.

Valve Lifters Were Jarred Loose.

The inlet valves were in the cylinder heads, operated by rocker arms, the lower ends of which rested in sockets in the valve lifter adjusters. The arrangement of the adjuster is shown at A in the accompanying illustration. The adjuster consisted of a screw, with a long hexagon head, threaded into the lifter; a recess in the hexagon head received the lower end of the push-rod and a lock-nut held the adjuster in place in the lifter. By loosening the lock-nut and screwing the adjuster up or down the adjustment could be changed. Probably through some hidden defect in the hardened steel, the recessed head had broken off, letting the push-rod drop and, of course, rendering the valve inoperative.

Tool Kit Scrap to the Rescue.

The stub of the adjuster remained in place, and the trouble man made use of it in his quick and simple repair, which is shown, completed, at B in the illustration. Rummaging round in his tool-bag, two nuts were found that would fit the thread of the adjuster screw. These were put on the screw; the upper one was screwed down only a few threds, leaving the top of the nut higher than the top of the broken screw and so forming a recess for the foot of the push-rod. The second nut was brought up and screwed hard against the top one, acting as a lock and holding it securely in place. The difference in the length of the adjuster, due to the breakage, was compensated for by bringing the screw up in its thread and locking it in its new position with the original lock-nut.

Suppositions Easily Answered.

Twenty minutes was the time for the whole job, including the temporary repair of the worn high-tension lead, and when the motor was started it ran as though there was no way to run except the right way. The adjuster had broken off straight across, and the foot of the push-rod had a pretty good seat. There did not happen to be an adjuster in stock in the shop, so the car ran for several days before a permanent replacement was made, and was none the worse for it, beyond a little roughening of the lower end of the push-rod, which was quickly remedied by grinding.

"But what would you have done," inquired the owner, "if the screw had broken off down near the lock-nut?"

"Ask me something harder. Put in another screw, that's all, and fix it up the same way."

"What if the screw broke off so short you couldn't get it out?"

"Well," retorted the trouble-man, practically, "she ran twenty miles on three cylinders. Guess she ought to be good for three more."

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In the RETAIL WORLD

H. L. Garton has opened a garage in Centerville, Ia.

Fred C. Schmidt is about to build a garage in Holland, Ia.

Edward Hayford & Sons are erecting a garage in Newton, N. H.

W. L. Kloppenburg is about to build a garage, 44 x 60 feet, in Everly, Ia.

Pieper & Krause of Norwood, Minn., are about to erect a garage, 36 x 40 feet.

A. C. Pollard of Nashua, N. H., has let contracts for a garage, 65 x 52 feet.

Herman Lundby of Ostrander, Minn., plans to establish a garage in that town.

S. P. Cleek, of Sebastopol, Cal., is having plans prepared for a garage, 50 x 100 feet.

The Boone (Ia) Auto Co. has awarded the contract for a new garage, 75 x 100 feet.

Frederick W. Davis of Fall River, Mass., plans to build a garage at 279 North Main street.

Paul Scott of Moundridge, Kan., has sold his interest in the Auto Garage to C. C. Kaegi.

Barney Gilinsky is building a garage in Council Bluffs, Ia. The cost will approximate $8,000.

John Page, formerly of Anderson, Ind., is about to establish a garage in Marion, in the same state.

The Superior Motor Car Co. has opened a new garage in Middletown, Ohio. Eugene Urtz is in charge.

G. C. Reames has purchased the Jackson Garage in Ellendale, Minn. He also will handle the Overland line.

Charles M. Wells of Scranton, Pa., has been granted authority to build a garage, 22 x 36 feet; it will cost $2,600.

The Montana Auto and Garage Co. of Butte, Mont., is building a new garage at Broadway and Arizona streets.

H. D. Easton of Oneonta, N. Y., is to reconstruct a barn for use as a garage and repair shop; it will be 30 x 100 feet.

Owen Letter's Sons are about to build a garage, 50 x 90 feet, at Trenton avenue and Westmoreland street, Philadelphia, Pa.

The Empire Garage, in Portchester, N. Y., which was recently destroyed by fire, is being reconstructed; the repairs will cost $7,000.

Rekenthaler & Heilman, garage operators in Cushing, Ia., have dissolved partnership; Rekenthaler will continue the business.

Construction is now under way on the Pavilion Garage, a new enterprise in Montpelier, Vt. It is located on Court street.

Charles C. Chase has had plans drawn for a garage which he will build in Bradford, Mass.; the estimated cost is $25,000.

Frank Leflem of Philadelphia, Pa., is securing estimates on a garage, 56 x 176 feet, to be built at Broad and Rockland streets.

Boyd & Michaels of Cedar Rapids, Ia., have sold their garage business; they will open another in Waterloo, in the same state.

The Bering Tire & Rubber Co. of Houston, Tex., has opened a branch store at 1114 Preston avenue; the main store is on Main street.

Canutesson & Godagen of Clifton, Tex., are making ready to build a garage, 30 x 80 feet; at present they operate a blacksmith shop.

John Scully is having plans prepared for a garage to be erected in Newark, N. J., at 235 Central avenue; the plans call for an expenditure of $5,000.

Oscar Harris and Martin White have laid the foundations for a garage at 725-727 Madison avenue, Paterson, N. J. The cost is estimated at $2,500.

E. H. Mahoney and Paul Clement of Cedar Falls, Ia., are about to open a garage in La Porte City, in the same state; it will accommodate 20 cars.

M. Bennett, manager of the Ridgeville (O.) Garage, is planning the establishment of a garage in Elyria, O. The location is on East Broad street.

John Torrent is building a garage in Muskegon, Mich. It will cost $10,000 and when completed will be occupied by O. C. Schultz of the Ford Motor Co.

Stillman & Devalon, proprietors of the City Garage in Portersville, Cal., have become automobile dealers; they have taken on the Detroiter agency.

Ralph C. Hamlin, the Franklin dealer in Los Angeles, Cal., has let the contract for a garage to be erected at 1040 South Flower street; it will cost $16,000.

The Missouri Taxicab Co., of St. Louis, is to build a $25,000 garage on Euclid avenue, south of Washington boulevard; the front section of the building, which will be leased for other business, will be 50 x 60 feet and two stories.

L. H. Roosa of Dimondale, Mich., has purchased the interest of Clifford Rhodus in the garage firm of Losee & Rhodus, in Charlotte, in the same state; the new style will be Losee & Roosa. The business includes the selling of Ford and Rambler cars.

The Barlow Garage Co., recently organized in Newark, N. J., has leased quarters in a building now being constructed at 133-35 High street. The new building will have facilities for charging 60 electric cars a day and will contain a 6-ton electric elevator.

C. W. Halderman and William Milroy have leased the Coliseum, at Adams and 6th streets, Marion, Ind., for five years and will make of it a garage and salesrooms; Small Bros., Buick dealers, will be associated with the two men in the remodeled building.

The North Star Auto Co., of 913 North Kansas avenue, Topeka, Kan., has been sold by W. T. Williams to P. Rutty, who formerly was interested in the North Topeka Cycle & Supply Co. The automobile company's style has been changed to North Topeka Auto Co.

New salesrooms are being built in Toledo, O., for L. E. Barger, Charles T. Lauer and Eli W. K'Burg, automobile dealers, at Madison avenue and 15th street; Barger is dealer in Abbott-Detroit and Pope-Hartfords, Lauer in American and Marion cars, and K'Burg in the Hupp-Yeats. The building will be one-story, 100 x 160 feet.

Affairs of the Flanders Manufacturing Co. of Pontiac, Mich., in New York City, heretofore conducted on the branch plan with William R. Chandler as manager, were taken over Tuesday of this week, 1st inst., by the Holt-Chandler Co., as an agency; associated with Chandler in the new company is H. Emil Holt, for a number of years metropolitan dealer in Pope cars. The salesrooms of the agency will be at 1808 Broadway, with a service station at 146 West 63d street; the former Flanders quarters at 1932 Broadway will be given up.

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ATHLETES AGAIN TRIUMPH DESPITE NEW SCORING PLAN

"Extra Credits" Fail to Help Chicago Automobile Club's Team—Fifteen Finish 170-Mile Contest With Clean Scores.

Although rules were altered so that those contenders who were sufficiently fortunate to finish the 171-mile run "in good order," so to speak, received credit points to balance against the demerits of their less fortunate team mates, the results of the sixth interclub reliability contest of the Chicago Automobile Club and the Chicago Athletic Association, which was contested on Saturday last, 12th inst., was the same as the results of all save one of the previous contests—a victory for the "athletes." The final reckoning gave the C. A. A. team 32 points on the credit side of the book and the team of the C. A. C. 233 points on the debit side.

Under the new rules, each of the contestants—there were ten on each team—received five credit points provided he finished without incurring penalty. Demerits were meted out under Grade 3 rules of the A. A. A., and the algebraic sum of the points of merit or demerit charged to the individual contestants gave the team scores. Only W. C. Thorne, on the "athletic" team, who drove an American car, was penalized. He had 13 points marked against him for work on his motor. On the Automobile Club team, A. M. Robbins was penalized the most heavily of the four contenders who helped to pile up the demerits. He received 250 black marks for time consumed in adjusting shock absorbers and lateness at the noon control at Brook, Ind. H. P. Branstetter (Kissel) and F. A. Yard (Inter-State), who received 3 points each for stalling their motors, and W. R. Roberts (Cadillac), who received 7 points for road work on his motor, were the others who helped to swell the wrong score of the Automobile Club team.

Both the Ray trophy, which is awarded for the team with the least penalization, and the White trophy, which goes to the team with the greater number of perfect scores, were captured by the victorious team, as well as a banquet served at the South Shore Country Club at the conclusion of the run at the expense of the losers.

The final scores were:

Chicago Athletic Association.

Driver and Car.	Plus.	Minus
C. T. Knisely (capt.), Diamond T.	5	..
W. F. Grower, Diamond T.	5	..
S. E. Hibben, Packard	5	..
H. C. Knisely, Premier	5	..
A. Ortmeyer, National	5	..
S. W. Hamm, Cole	5	..
W. C. Thorne, American	..	13
J. W. Hayden, Nyberg	5	..
A. J. Banta, Locomobile	5	..
L. J. Jacques, Peerless	5	..
Total	45	13

Total, 32 plus.

Chicago Automobile Club.

M. H. Luce (capt.), Velie	5	..
H. A. Ford, Premier	5	..
G. F. Ballou, Apperson	5	..
A. M. Robbins, Abbott-Detroit	..	250
T. E. Mann, Locomobile	5	..
F. X. Mudd, Lozier	5	..
H. P. Branstetter, Kissel	..	3
W. R. Roberts, Cadillac	..	7
F. A. Yard, Inter-State	..	3
C. G. Sinsabaugh, Premier	5	..
Total	30	263

Total, 233 minus.

Grennon Stars at New England Meet.

Things went Joe Grennon's way at the race meet on the Imperial Park track, Springfield, Mass., promoted by E. W. Powell, on Saturday last, 12th inst. Driving a Mercer car, he won three of the seven events on the program, including what proved to be the most interesting contest of the day, the five-mile free-for-all handicap, which he finished in 7:34⅗ from scratch. His other victories comprised a half-mile free-for-all and a three-mile Class E event, which he accounted for in 49⅕ seconds and 4:28, respectively, in each case driving against two contenders, H. Hickman (Mercedes) and J. Berriman (Stoddard). Harry Kyle (Pope) took two of the remaining events, and Louis Menenghetti (Fiat) and Henri Hickman (Mercedes) accounted for the remainder. The summary:

Three miles, free-for-all—Won by Henri Hickman (Mercedes); second, Joe Grennon (Mercer). Time, 4:49⅘.

Five miles, for cars with displacements of under 601 inches—Won by Harry Kyle (Pope); second, George Cook (Zust). Time, 7:39.

One mile, time trial—Louis Menenghetti (Fiat). Time, 1:28.

One-half mile, free-for-all—Won by Joe Grennon (Mercer); second, Henri Hickman (Mercedes); third, J. Berriman (Stoddard-Dayton). Time, 0:49⅘.

Three miles, for cars with displacements of under 601 inches—Won by Joe Grennon (Mercer); second, J. Berriman (Stoddard-Dayton). Time, 4:28.

Ten miles, match race—Won by Harry Kyle (Pope); second, Henri Hickman (Mercedes); third, George Cook (Zust). Time, 15:06.

Five miles, free-for-all, handicap—Won by Joe Grennon (Mercer), scratch; second, Harry Kyle (Pope), 10 seconds; third, Henri Hickman (Mercedes), 30 seconds. Time, 7:34⅗.

TROPHY GIVER STARTS HIS OWN GLIDDEN TOUR ALONE

Several Cars Accompany Him from Detroit to Indianapolis But There Stop—Stimulating Interest Avowed Object.

Accompanied by an escort of eight cars, among which were the Flanders electric coupe which blazed the trail, and one of the three Maxwell cars which finished the National Reliability Tour of 1911 with clean slates, Charles J. Glidden left Detroit Monday morning last, October 14th, to cover the 1,600 mile course which had been laid out for the abandoned A. A. A. National tour of this year. Mr. Glidden's professed purpose in piloting his Maxwell between the Automobile Capital and the Crescent City, over roads which are none too good, to put it mildly, is to stimulate interest in the run which will be made next year, and with this in view invitation has been extended to motorists along the line to accompany the trophy donor for distances as long or as short as they will. As for the eight cars which accompanied Glidden out of Detroit, they proceeded only as far as Indianapolis, which was reached on Tuesday evening last, October 15th.

Before the first night stop—Ft Wayne, Ind., 170 miles from Detroit—had been reached, one of the eight consorts, a Maxwell car driven by Dr. F. E. McClure of Cleveland, was overturned in a ditch. The accident was caused by the blowing out of a rear tire when the car was traveling at a high rate of speed, and fortunately none of the occupants was seriously injured. Fine roads were encountered for the entire distance which separates Indianapolis from the Automobile City, which accounts for the 30-mile-an-hour average running time which was maintained.

In the car with Glidden are M. R. Newton, advertising manager of the United States Motor Co.; Charles Walls, who drove one of the winning Maxwell entries in the tour of last year, and a photographer, all of whom will complete the tour. If things go as well as the tourists expect, New Orleans will be reached Saturday evening next, 19th inst.

Dust Accounts for Race Postponement.

Because of the condition of the track, which was soft and dusty, the races which were to have been run at Rockingham Park, Salem, N. H., Saturday last, 12th inst., did not materialize. According to present indications, the races will be staged on Saturday next, 19th inst., by the Salem Automobile Club.

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EVEN HONORS IN ILLINOIS FOR DISBROW AND NIKRENT

Former Lowers Track Record and Latter Wins Ten-Mile Event at Springfield—Ulbrecht and Endicott Get One Each.

Although both Louis Disbrow, who piloted a Simplex car throughout the day, and Joe Nikrent, who drove a Case, each won two of the competitive events on the program offered Saturday last, 12th inst., at Springfield, Ill., by the Illinois State Fair Association, by virtue of a single time trial which he completed in 0:51⅕, lowering the local track record for the distance by two seconds, the Simplex pilot became the "matinee idol." On the other hand, Nikrent was roundly acclaimed when he crossed the tape a winner in the feature event of the day, a ten mile free-for-all, which he completed in 10:28⅕. He also won a five-mile Class C event. Disbrow won a three- and a five-mile event, his times being 2:56⅘ and 4:35⅘ for the respective contests. The two numbers which remained on the seven-event program, a five-mile Class C event for cars with displacements of 231-300 inches, and a five-mile free-for-all handicap, went to William Endicott (Schacht) and H. Ulbrecht (Case). The summary:

Five miles, for cars with displacements of 161-230 inches—Won by Joe Nikrent (Case); second, Luttrell (Stutz). Time, 5:35.

Five miles, for cars with displacements of 231-300 inches—Won by William Endicott (Schacht); second, Madden (Inter-State); third, Luttrell (Stutz); fourth, Mconald (National). Time, 5:10.

One mile, time trial—Louis Disbrow (Simplex). Time, 0:51⅕.

Five miles, free-for-all handicap—Won by H. Ulbrecht (Case); second, Parker (Fal). Time, 5:30⅗.

Three miles, for cars with displacements of under 601 inches—Won by Louis Disbrow (Simplex); second, William Endicott (Schacht); third, Kilpatrick (Hotchkiss). Time, 2:56⅘.

Five miles, for cars with displacements of 301-450 inches—Won by Louis Disbrow (Simplex), second, H. Ulbrecht (Case); third, William Endicott (Schacht). Time, 4:35⅘.

Ten miles, free-for-all—Won by Joe Nikrent (Case); second, Luttrell (Stutz); third, Parker (Fal); fourth, McDonald (National). Time, 10:28⅕.

Indianans Talk Cross-Continent Tour.

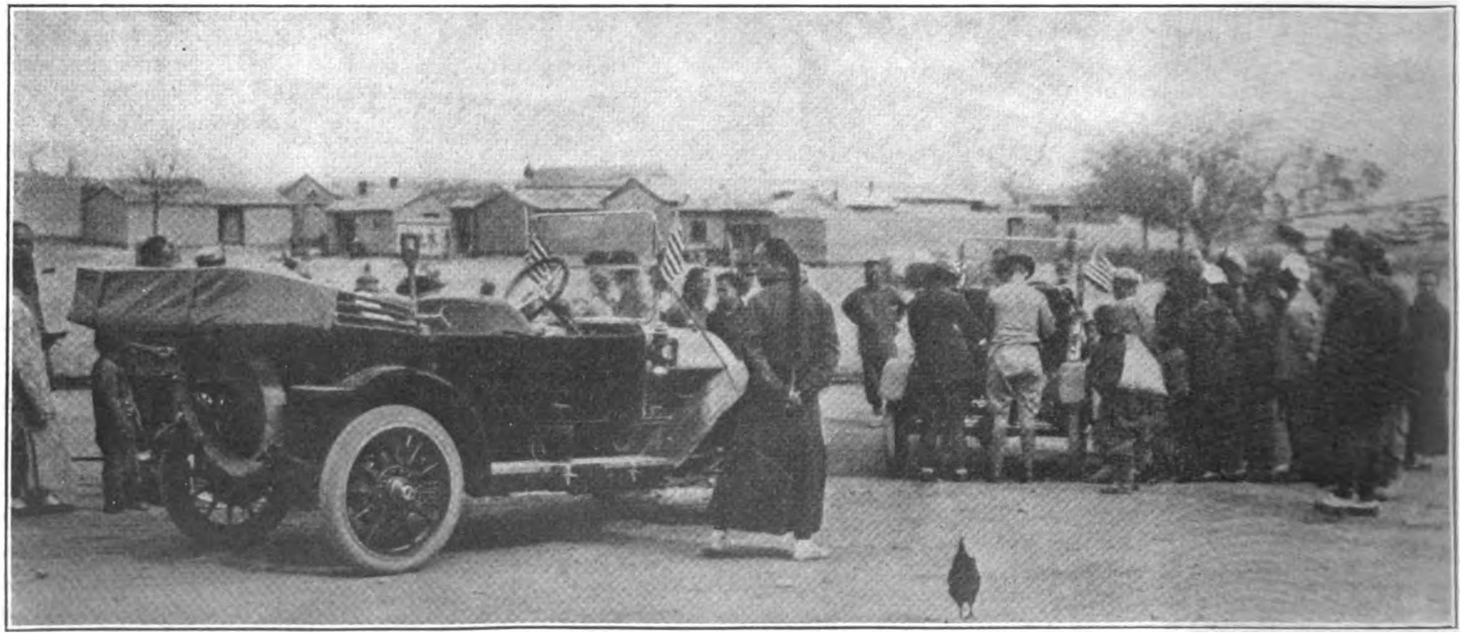
If a suggestion which was made at the last meeting of the Indiana Automobile Manufacturers' Association in Indianapolis bears fruit, the next tour promoted by that body will be a very much more pretentious affair than the Four States expeditions which hitherto it has undertaken. It is proposed to kill two birds with the same tour, so to speak, by selecting a route from Indianapolis across the continent to San Francisco and thereby not only extensively advertising the Indiana products in which the tourists will ride, but blazing a trail for the Fisher-Allison coast to coast stone highway, if that project becomes a reality. The matter is at present in the hands of the tours committee, though in view of the fact that those in attendance at the meeting were unanimously in favor of it, it is not altogether unlikely that it will come to pass.

SEEKING TO REDUCE THE SMALL BOY STREET PERIL

"Conservers of Human Life" Undertake to Teach Children to Avoid Traffic Dangers—Blackboard Lectures a Feature.

Of all the perils that beset motorists, particularly in large cities, none equals the small boy and none is so numerous. How to subdue his habit of playing in the public street long has been constituted a problem, the solution of which is difficult, if not impossible. In an effort to save the youngsters from themselves, however, the American Museum of Safety, which exists to "conserve human life" and which at present is located at 29 West 39th street, New York City, has undertaken a course of lectures with a view not only of keeping the young ones off the streets but of teaching them how to avoid accidents in crossing streets.

The first lectures were given in the rooms of the museum by Mrs. Dr. Tolman, wife of the director of the institution, but permission of the educational authorities having been obtained, a dozen New York schools were visited during the last month. The lectures are free and are open alike to adults and children. They are illustrated by diagrams, chalk drawings and lantern slides and have been attended by upwards of 4,000 children. During the summer the schools of New Jersey were covered, and it is believed that as a result of the lectures the proportion of accidents to pedestrians decreased 40 per cent. during the last three months.



CELESTIAL CURIOSITY—ARRIVAL OF OVERLAND CARS IN TIENTSIN, CHINA

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1,017,236. Vehicle Wheel. Ivar L. Tvinde, Watertown, S. D. Filed Mar. 9, 1911. Serial No. 613,419.

In a vehicle wheel, the combination with a rim and a hub, of flat spring steel spokes, arranged around the hub, each spoke having a U-shaped bend intermediate its ends and curved end portions that run to the rim and hub respectively, the outer end of each spoke having a hook formation arranged for pivotal connection with the rim, clips secured to the rim, one for each spoke, each clip having a round shank between which and the rim the hook of the spoke is confined in pivotal condition, and clips for securing the inner ends of the spokes upon the hub.

1,017,300. Single Spark Ignition System. Edwin S. Lincoln, Brookline, Mass., assignor to Electric Goods Manufacturing Company, a Corporation of Maine. Filed Dec. 6, 1909. Serial No. 531,645.

1. In an electric discharge producing system, in combination; a source of electric energy; an induction coil; an energizing circuit adapted to connect the source of energy with the coil; a circuit interrupter having separable contacts intercalated in said energizing circuit, said interrupter including an actuating winding for causing the separation of said contacts; an actuating circuit adapted to connect the source of energy with the actuating winding; and means for contemporaneously closing said energizing and actuating circuits independently.

1,017,330. Spring Wheel. Frank Smith, Rossville, Ga. Filed Apr. 11, 1911. Serial No. 620,349.

1. A wheel comprising a hub, spaced inner and outer rims, the inner rim being carried by the hub, and the outer rim having annular flanges on its inner periphery, cushioning elements interposed between the rims, and an annular band encircling and secured to the outer periphery of the inner rim, said band having a channel on one side of the inner rim, annular plates encircling the band and closing up the space between the rims, the aforesaid flanges having a sliding engagement with the plates, a loose connection between the plates and the flanges, a split ring seating in the foresaid channel and engageable with one of the plates, means for contracting said ring in the channel, integral lugs on the band, said lugs being located between the plates, and fastening means passing through the lugs and the plates.

1,017,335. Lock for Steering Wheels. Theodore D. Stanley, Detroit, Mich. Filed June 5, 1911. Serial No. 631,447.

1. In a steering mechanism for vehicles, a steering post, a sleeve adapted to reciprocate on the post, a steering wheel adapted to rotate on the post, a clutch, the co-acting parts of which are respectively carried by the sleeve and steering wheel, means for forcing the clutch member carried by said reciprocating sleeve into co-acting relation with the clutch member carried by the wheel, and means adapted to secure the reciprocating portion of the clutch in a locked and an unlocked relation to said steering wheel clutch portion.

1,017,363. Wheel. James J. Adamsen, Brooklyn, N. Y. Filed May 15, 1911. Serial No. 627,182.

1. A wheel having a rim, an outer tread shoe, a device including a plurality of links arranged in a continuous zig-zag course around the entire rim, bearing pieces having elongated slots, pivot pins at the vortex of each angle formed by the links engaging in said slots, and radially adjustable plugs upon which rest the bearing pieces on the inner side of said device, whereby the pressure at any point upon the shoe may be distributed to all parts of the shoe around the entire rim.

1,017,396. Radiator. John M. Fedders, Buffalo, N. Y., assignor to Theodore C. Fedders, Buffalo, N. Y. Filed Dec. 8, 1911. Serial No. 664,603.

1. A radiator comprising inlet and outlet headers, and a core arranged between said headers and consisting of a plurality of units, each unit comprising two sections, one of which is constructed of a strip of sheet metal to form a plurality of flat webs and a plurality of transverse locking beads arranged at intervals on said strip and the other section being constructed of a strip of sheet metal to form a plurality of transverse plaits, each of which engages at its crown with the concave side of one of the beads in the other section and a plurality of curved webs each of which connects the opposing plies of two adjacent plaits and is arranged with its convex side opposite a flat web of the other section.

1,017,435. Shock Absorber. Henry Luxembourger, Jr., Los Angeles, Cal. Filed Apr. 18, 1910. Serial No. 556,029.

1. In combination, a vehicle having a body, an axle, a carriage spring supporting said body on said axle, a resilient cross-head attached to said axle, stems co-operating with said cross-head, springs disposed around said stems seating against said cross-head, and means for guiding said stems on said body.

1,017,453. Gas Engine Starter. John J. O'Leary, Healdsburg, Cal. Filed Feb. 25, 1911. Serial No. 610,839.

1. The combination of a driven shaft, a clutch hub keyed upon said shaft, a flanged disk adapted to drive said hub in one direction, friction rollers interposed between the periphery of said hub and the inner surface of the flange of the disk, a casing removably attached to the flanged side of the disk, a housing secured to the other side of said disk, a spring inclosed in said housing, a pin supported adjacent the periphery of the housing and to which one end of said spring is connected, a collar having radial teeth upon one of its faces slidably mounted upon said shaft and projecting inwardly into the aforesaid housing and having attached the other end of the spring, a complementary clutch member secured upon the shaft, having teeth adapted to engage with the teeth of said collar, a lever adapted to engage and restrain the collar, and a spring bearing against one side of the flanged disk and normally effective to thrust the toothed collar into engagement with the clutch member, and means for restraining the housing during the winding of the main spring.

1,017,456. Tire. William Pavlik, Bayport, N. Y. Filed Sept. 22, 1911. Serial No. 650,718.

A tire comprising a concave rim, an annular yieldable block mounted upon said rim, a convexo-concave tire mounted upon said block, socket members carried by the inner side of said tire and abutting against said block, bolts extending through said rim and said block into said socket members, said block snugly engaging said bolts heads carried by said bolts and movably arranged in said socket members, nuts screwed upon the inner ends of said bolts for retaining said bolts in engagement with said rim, and coiled compression spring embedded in said bylock and encircling said bolts between said socket members and said rim.

1,017,459. Electric Spark Plug for Combustion Engines. Leopold Podszus, Charlottenburg, Germany. Filed Nov. 23, 1910. Serial No. 593,951.

1. In a spark plug, an electrode having an opening therein, non-radial holes in communication with said opening, and means for admitting air through said opening and said holes for causing a rotary circulation of air around the electrode.

1,017,466. Vehicle Wheel Rim. George T. Reichenbach and Hartwig O. Peck, Portland, Ore., assignors to H. O. Peck Automobile Wheel Company, Incorporated, Portland, Ore. Filed May 9, 1911. Serial No. 626,018.

1. In a vehicle wheel, a rim composed of a pair of side plates having tire receiving channels at their outer peripheries, spoke heads pivoted between said plates and spaced apart, an inner annular band for closing the space between said side plates adjacent to the inner edges thereof, said band having portions bent to form spoke head receiving pockets and means for securing said side plates and said band in position.

1,017,474. High Tension Magneto Electric Apparatus. Frederick Richard Simms, Kilburn, London, England, assignor to The Simms Magneto Company, a Corporation of New York. Filed June 27, 1910. Serial No. 569,200.

1. In a high tension magneto, the combination with the high tension terminal thereof, of a conductor connected with the high tension terminal, a detachable ring surrounding a portion of the conductor, out of contact therewith and separated from the conductor only by an air gap, to form a spark gap between the inner face of the ring, and the portion of the conductor passing therethrough, said ring having a ground connection, and means for detachably supporting said ring, whereby the ring may be removed and a ring of different internal diameter substituted therefor, to adjust the spark gap.

1,017,485. Broken Spring Repairer. John H. Warner, Mount Pocono, Pa. Filed June 29, 1911. Serial No. 635,939.

1. The herein described emergency repairer for vehicle springs consisting of a flat spring of less length than the one to be repaired and having eyes in its extremities, a rod passing transversely through each of said eyes and having itself an eye in one end and a hook in the other, a section of chain having one end link engaging said eye in the rod and of a length sufficient to permit it to pass around the broken spring and engage the hook, and means for temporarily holding the emergency spring upon the center of the other spring.

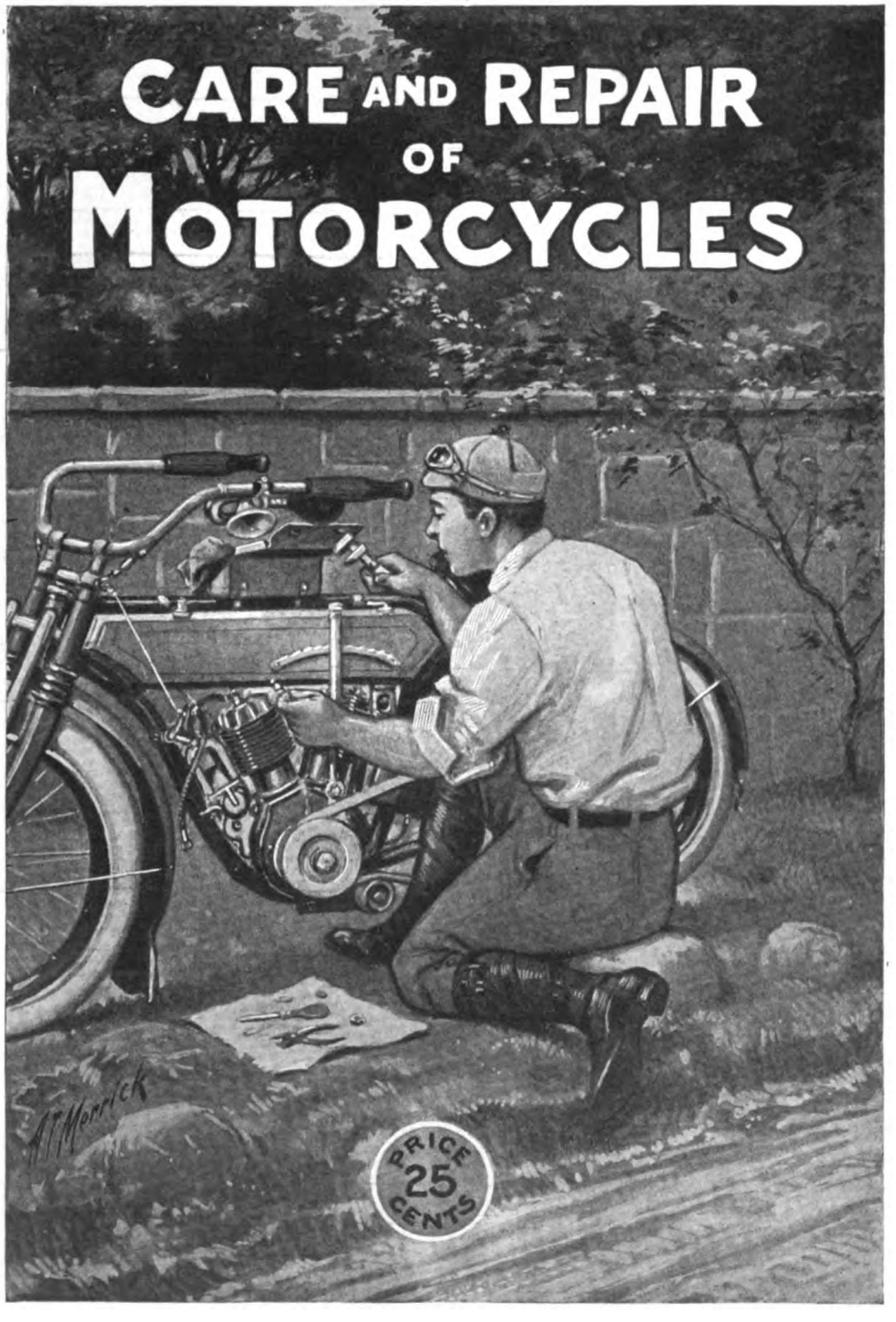
1,017,512. Vehicle Spring. George Conderman, Hornell, N. Y. Filed Jan. 15, 1909. Serial No. 472,408.

1. A vehicle frame comprising strip metal in rectangular form for a supporting platform, strip metal in the form of an arch attached to said platform at each side, leaf springs on said arch, and a vehicle body supported by said leaf spr' igs.

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Spend a quarter for this book—save many dollars in repair bills

It is the motorcyclist's best friend because it is always on the job to help in time of trouble and you don't need a mechanical engineer to understand it.



It is brimful of practical advice and suggestions relating to every type of motorcycle.

The present edition includes free engine clutches, two-speed gears, mechanical lubricators and magnetos, together with special matter on motors, valves, carbureters, fuel and important general subjects, all plentifully illustrated.

Dealers and jobbers in all parts of the country are selling "Care and Repair of Motorcycles" to both new riders and veterans as the best aid in correcting and avoiding motorcycle trouble.

Ask your dealer about it, or send a quarter to us for a copy to be sent you postage prepaid.

Special rates to Jobbers and Dealers in quantity orders.

Bicycling World Co.
1600 Broadway
NEW YORK

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READ

WHAT THE FLANDERS CO. HAS TO SAY ABOUT THE

ELBA

ELECTRIC VEHICLE BATTERY

which propelled the 1912 Glidden Tour Path-Finder Car from Detroit to New Orleans, 1721.7 miles, thus establishing a record never attempted or thought possible for an electric vehicle

FLANDERS MANUFACTURING COMPANY

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September 16th, 1912.

The Willard Storage Battery Company,
CLEVELAND, OHIO.

Attention - Mr. Willard.

Gentlemen:

The batteries which you furnished us for use on the Flanders Electric on its Glidden Tour Path-finding trip, we are returning to you after having made a slight examination of their condition before shipping.

The conditions which we encountered were at times extremely severe. The load on the battery very frequently ranged from one hundred to three hundred amperes continuously. This was followed by an immediate charge, generally starting at about ninety amperes and finishing at thirty. I do not see how any battery could have stood what was imposed upon this, without showing very decidedly the effects of its treatment.

Outside of the breaking of one connector, absolutely no trouble was experienced with the battery at any time. It was frequently found that, after standing all night, the temperature of the battery was 110 degrees Fahrenheit; attempting to charge the battery at this temperature naturally boosting to the neighborhood of 120 to 125; repeated charging under these conditions would naturally cause more or less deposit from the plates.

We note that in battery which was driven about fifteen hundred miles this deposit is hardly noticeable, showing the remarkable wearing qualities of the battery which you are making. It is undoubtedly the hardest test to which an electric car was ever subjected, and the success which we had on the trip was very largely due to the most excellent performance of your product.

We wish to say at this time that your battery is not surpassed or equalled by any commercial battery that we know of. Wishing you continued success, we beg to remain,

Yours very truly,
FLANDERS MANUFACTURING COMPANY.

New York Branch, 126 West 52d Street
Chicago Branch, 436 S. Dearborn Street
Detroit Branch, 1911 Woodward Avenue

WILLARD STORAGE BATTERY COMPANY
CLEVELAND, OHIO

WRITE US FOR FULL INFORMATION
Depots in all the principal cities in the United States, Canada and Mexico

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What to Do with

If You Have Any Good Ideas Cash in on Them by Putting

The Cash Prize Used Car Contest is in no sense a literary contest and no article will be judged by the amount of correct English or pure rhetoric with which it is constructed.

The articles may be long or short and "literary style" will not figure in the award. Practical ideas, and preferably plans which have been put into practice and proved true, are what are desired. The policy pursued by the small dealer is likely to prove quite as valuable as that brought to bear by the large one.

How Do You Overcome the Used Car Evil?

How do you keep it from standing between you and the profit you ought to earn through the sale of a new car? That's what we want to know, so

Just Give Us the Facts. We Will Write the Article

if you say so, and put it in shape for publication. Of course, we will print your letter just as you write it unless otherwise ordered, but we are willing to help you put it in good shape if you think we ought to do it.

We want to co-operate with dealers by giving full publicity to the ways and means adopted by them in overcoming the profit-killing influence of the car that is being sold and re-sold to the detriment of new car sales.

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:he Used Car?

ın This Subject You Can
'hem in Writing for Us.

The Cash Prizes Are Worth Trying For

But the greatest good will come to you through the exchange of ideas of dealers all over the United States, many of whom doubtless have partially or wholly mastered the situation. It's up to you to help, and your plans may win you one of the following sums of money:

$50 for the best article on
$25 for the second best article on
$15 for the third best article on
$10 for the fourth best article on

How to Handle the Used Car Problem

This Offer Is Open to All

and communications from Motor World non-subscribers will receive the same consideration as those from subscribers. There are no strings to the proposition. We will spend this money for the remedy and we don't care who the doctors are.

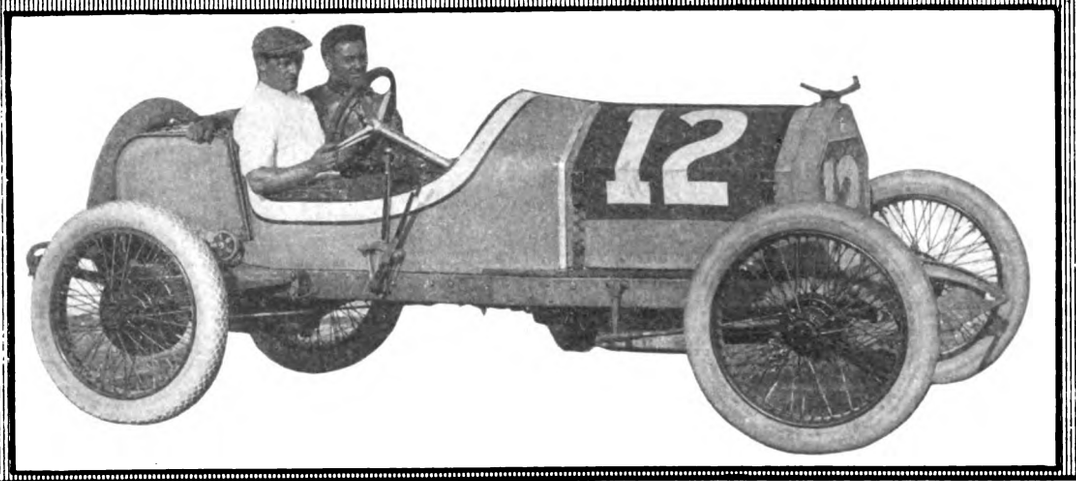
Contest Closes January 2nd, 1913

and on this date the following judges—Carl H. Page, of the Carl H. Page & Co., metropolitan distributors of Chalmers cars; William Colt, of Colt-Stratton Co., Eastern agents Cole cars; and Harry Houpt, general manager American Locomotive Co., manufacturers of Alco Cars and Trucks—will take all contributions into consideration, announcing the winners in Motor World, issue of February 6th, 1913.

We want your co-operation for our mutual benefit and for the betterment of the trade in general. Send us your letter—today.

Address Communications to Contest Editor, MOTOR WORLD
1600 Broadway, New York

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The Stutz, the Only American Car to Finish the Grand Prix, Was Equipped with

70% MORE TIRE MILES

McCUE WIRE WHEELS

IDEAL MOTOR CAR Co. STUTZ INDIANAPOLIS, IND.

THE CAR THAT MADE GOOD IN A DAY

THE FAMOUS STUTZ MOTOR CARS MANUFACTURED BY THE IDEAL MOTOR CAR CO.

430-438 N. CAPITOL AVE. Indianapolis, Ind.

October
Ninth
1912

McCue Company,
Buffalo, N. Y.

Gentlemen:

We wish to inform you that your wire wheels stood up nobly well in both the Vanderbilt and Grand Prize races, on the Stutz car.

We found it necessary to only change one rear tire in the Vanderbilt race and one rear tire in the Grand Prize race, the front tires going through both races, the Vanderbilt and Grand Prize, without a change and the two rear tires that we changed in both races were simply on account of worn tread and not due to loss of air. Upon examining the spokes of these wheels, after going through both races, we did not find one loose spoke or a wheel the least out of true.

This performance has not only converted the writer to wire wheels but has caused him to give an option of wire wheels on future Stutz cars.

None of the wheel locks loosened a particle, in either race, and were just as secure at the finish as they were in the start.

We wish to congratulate you on your wheels from a practical standpoint and wish you every success you deserve.

With best personal regards, beg to remain,

Very truly yours,

IDEAL MOTOR CAR COMPANY.

H. C. Stutz

President & General Manager.

HCS/RG

In over 700 miles of racing, this same wire wheel equipped car changed only two tires—neither of which needed to be changed.

A simple perusal of the letter reproduced herewith is the best selling story of wire wheels we know. Just read it over—it's simply immense. In both the Vanderbilt Race of over 300 miles and the Grand Prix Race of over 400 miles, the Stutz car changed only the two rear tires, one in each race, and then changed them only because the tread was worn and not because they had blown out.

No need to emphasize the fact that no possible strain could be greater than that of driving, as did Gil Anderson, in both these events and yet upon examination these wheels were found to be perfect in every respect.

Remember that the performance of wire wheels on racing cars is merely an indication of their wonderful merit on cars in ordinary use. Dont' fail to insist on having wire wheels upon the cars you intend to sell. It's dollars and cents in your pocket—because you will sell more cars when wire wheels are in general use and because the cars you sell will give better satisfaction.

Let us ask you again to be sure and read this letter we show herewith. Then write for our booklet, "Mileage Plus," which tells you all about wire wheels.

The McCue Co.

BUFFALO, N. Y.

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Send the Application Below

No matter what cars you *now* handle—get the Franklin Dealer Proposition. Franklin dealers make money—and have a permanent, steadily increasing business.

Franklin is now the third largest selling high priced car, and gaining rapidly on second. Satisfied owners and successful dealers are a winning combination.

Franklin cars are easy to sell because (1) use less gasoline, averaging 20 per cent to 35 per cent more mileage per gallon; (2) use less oil, averaging 400 miles per gallon, without smoke; (3) use fewer tires, averaging 8000 to 10,000 miles per set, the 1911 record; (4) travel faster in the long run, owners thinking little of making 200, 300 or even 350 miles and more per day, without fatigue; (5) ride easier, bowling along so smoothly and comfortably, without jolt or jar, that driver and occupants do not realize that they are steadily traveling at such speed; (6) and wear longer than other cars, many Franklin cars giving satisfactory service to the same owner for five, six, eight and ten years.

We will send full particulars of the Franklin Dealer Proposition to any automobile dealer, garage owner or automobile owner financially capable and with the business experience to become a successful dealer, provided he will fill out this coupon and mail to us immediately.

The sending of this coupon does not obligate the sender or us. It is merely a convenient way to get all the facts.

FRANKLIN MODELS AND PRICES

Franklin cars are built in four models on five chassis sizes:

	List
D Touring, 6 cylinders, 38 H.P., 5 passengers	$3,500
D Torpedo-phaeton, 6 cylinders, 38 H.P., 4 passengers	3,500
G Touring, 4 cylinders, 25 H.P., 5 passengers	2,000
G Runabout, 4 cylinders, 18 H.P., 2 passengers	1,650
H Touring, 6 cylinders, 38 H.P., 7 passengers	3,750
H Limousine, 6 cylinders, 38 H.P., 5 passengers inside	$4,750
M Touring, 6 cylinders, 30 H.P., 5 passengers	2,800
M Torpedo-phaeton, 6 cylinders, 30 H.P., 4 passengers	2,800
M Roadster, 6 cylinders, 30 H.P., 2 passengers	2,800

SEND THIS APPLICATION

FRANKLIN AUTOMOBILE CO., Syracuse, N. Y.

Without obligation to me, please send your "Dealer Proposition" as advertised in October 17 issue Motor World.

Name .....

Address .....

References .....

1 .....

2 .....

3 .....

I handle the following cars

.....

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SEE WHAT'S GOING ON INSIDE

DON'T GUESS AT TROUBLE

VISO "The Plug with the Open Window"

PAT. PEND.

If you, Mr. Dealer, would handle this plug only for the radical improvement we have made upon it in the installation of the "open window," then you have a big selling argument, but we do not want you to lose sight of the fact that this plug, without the "see at a glance" feature, would still be the most sturdy, dependable spark plug on the market at any price.

We are featuring, first of all, the quality of materials used—the construction that guarantees against breakage and injury from oil, dust and dampness. In fact, every good point that goes to make a good plug, all are embodied in the Viso.

The "open window" or "port," as shown in this illustration, is a time, trouble and money saver, for with your eye on the window and your hand on the carburetor adjustment, you can regulate ignition in an instant—**not by guess work, but by sight,** remembering always that imperfect combustion or carbon troubles will be indicated by a yellow light—perfect combustion by a pale blue electric spark—a dead cylinder by a dark window.

In the lower right hand corner of this advertisement, we have enumerated the good selling points of Viso plugs—read them, and then order a set for your own car. Use them to demonstrate to your trade and see how quickly and surely your spark plug business will increase.

Write for our literature describing this device in more detail—that is, if this advertisement does not completely satisfy you.

Remember the price, $1.00 on all three sizes, allows you a liberal commission. Get the story from us.

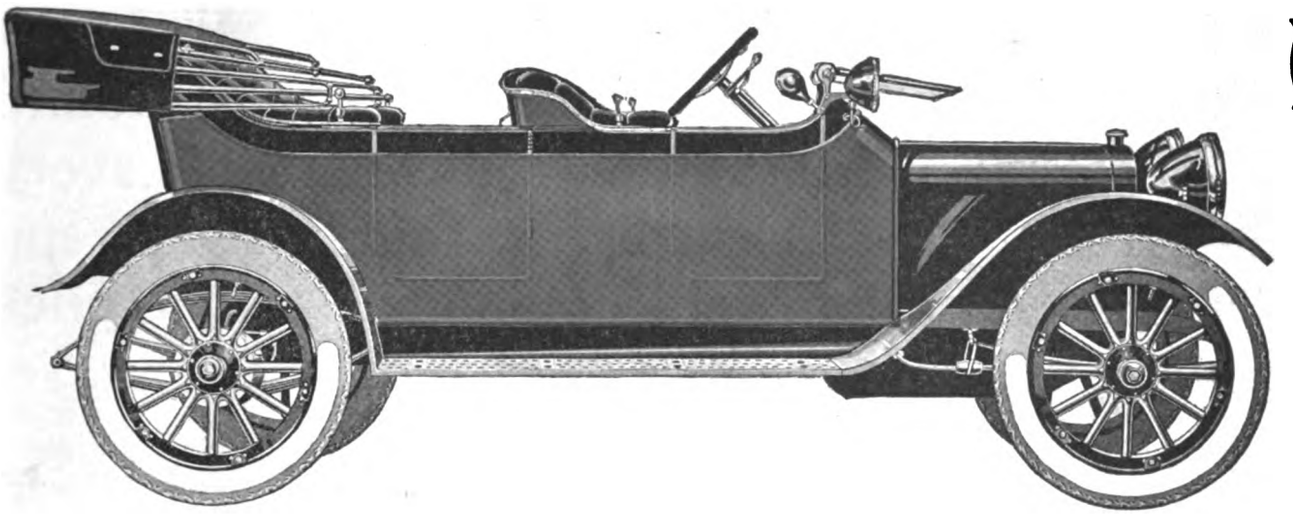
The Features of the VISO Plug:

1. Indicates in which direction your trouble lies.
2. It facilitates the timing of the engine.
3. It intensifies the spark in all cylinders.
4. Consumes only minimum current.
5. Adjustable gap permits regulating the spark for any cylinder.
6. The gap intensifies the spark and is absolutely non-injurious to battery, coil or magneto.
7. Causes instantaneous combustion.
8. Is a correct check on the current as delivered to the spark plug.
9. It cleans itself should it become fouled, by merely increasing the gap.
10. It is fully guaranteed and offered with the conviction that it is a great step forward in plug construction.

THE RAPP MANUFACTURING CO.

611 Jefferson Avenue **TOLEDO OHIO**

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R-C-H "Twenty-Five" "The Car Complete" $900

F. O. B. DETROIT

THE CAR

The best materials, the highest-grade workmanship, and the most up-to-date ideas in construction.

Wheelbase—110 inches.

Motor—Long stroke; 4 cylinders cast en bloc; 3¼-inch bore. 5-inch stroke. Two-bearing crankshaft. Timing gears and valves enclosed. Three-point suspension.

Steering—Left Side. Irreversible worm gear, 16-inch steering wheel. Throttle control on steering column.

Control—Center Lever operated through H-plate integral with universal joint housing just below. Hand lever emergency brake at driver's right. Foot accelerator in connection with hand throttle.

Springs—Front, semi-elliptic; rear, full elliptic and mounted on swivel seats.

Frame—Pressed steel channel.

Axles—Front, I-beam, drop-forged; rear, semi-floating type.

Transmission—Three speeds forward and reverse; sliding gear, selective type.

Construction—Drop-forgings wherever practicable; chrome nickel steel used throughout all shafts and gears in the transmission and rear axle; high carbon manganese steel in all parts requiring special stiffness.

Body—Full 5-passenger English type; extra wide seats.

EQUIPMENT

The most complete, highest-grade equipment ever placed on a popular-priced car.

Non-skid tires—32 x 3½.
12-inch Hall Bullet electric head lights with double parabolic lens.
6-inch Hall Bullet electric side lights with parabolic lens.
Exide 100 Ampere Hour Battery.
Bosch Magneto.
Warner Auto-Meter.
Demountable rims.
Extra rim and holders.
Tally-ho horn.
Jiffy curtains—up or down instantaneously.
Top and Top Cover.
Windshield.
Rear view mirror.
Tool-kit, Jack, Tire Repair Kit, Pump.
Robe Rail.

R-C-H Comes Out With Flying Colors Under Severest Test

The absolute dependability of the R-C-H under any and all road conditions was thoroughly demonstrated once more during the 800-mile Non-Stop Reliability Run held under the auspices of the Buffalo Automobile Club September 11 to September 14.

It was essentially a hill climbing test as, except during a portion of the last day, the route was up and down the steepest and sharpest grades to be found. In fact, the committee announced that **some of the roads embodied in the Run had never before been covered by automobiles.**

The R-C-H was the heaviest four-cylinder stock model car in the run and had at all times four passengers and enough extra equipment in the way of tires and accessories to make up a full five-passenger load.

Some idea of the grades encountered may be obtained from the fact that one six-cylinder car had to be towed up one of the hills; and another entry—one of the highest priced cars in America—stripped its gears on this same hill.

The R-C-H went through the entire Run without a single brake adjustment and without any kind of mechanical defect or breakage. The light wear on the tires, too, is demonstrated by the fact that not a single tire was changed during the entire Run, nor was there the slightest bit of trouble.

The only penalty suffered by the R-C-H was nine points for taking water outside the controls, which was due to the radiator leaking slightly.

The record made by the R-C-H in this Run proves—that over any kind of roads and in any kind of going the R-C-H is thoroughly reliable and dependable, and that it is at the same time the most economical car both in tire wear and fuel consumption.

Two Passenger Roadster, 110 inch wheelbase, $900, f.o.b. Detroit
Three Passenger Coupe, 110 inch wheelbase, $1300, f.o.b. Detroit

DEALERS IN VACANT TERRITORY WILL FIND OUR PROPOSITION ATTRACTIVE

R-C-H CORPORATION, 104 Lycaste Street, Detroit, Michigan

Branches — ATLANTA, 548 Peachtree St. BOSTON, 563 Boylston St. BUFFALO, 1225 Main St. CHICAGO, 2021 Michigan Ave. CLEVELAND, 2122 Euclid Ave. DENVER, 1520 Broadway. DETROIT, Jefferson Ave. and Lycaste St. KANSAS CITY, 3501 Main St. LOS ANGELES, 1242 South Flower St. MINNEAPOLIS, 1206 Hennepin Ave. NEW YORK, 1989 Broadway. PHILADELPHIA, 330 North Broad St. SAN FRANCISCO, 819-835 Ellis Ave. WALKERVILLE, ONT., CANADA.

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To win the fiercest war ever known to motordom, the MICHIGAN "40" enters the field with every big selling feature—electric lights, four forward speeds, extra size tires, complete equipment—at a price no other maker will meet—

$1,585

The Fight of the Forties

There are 72 makers in a fight for supremacy, with cars around 40 horsepower.

Most of the ablest engineers now give their whole thought to "40's." And some of the finest, most luxurious cars ever built are now in this class.

Yet the prices on Forties, since this war began, have practically been cut in two.

Into this fight comes the Michigan after four years' preparation.

And the offer we make outbids every rival, and every man who knows will concede it.

300 New Features

We have built 5,000 cars and have carefully watched their performance.

We have worked out in the past four years, more than 300 improvements.

We have brought to bear on this car some of the best brains in the industry.

Every engineering advancement has been noted and adopted. All the comforts and luxuries have been sought out and included.

Now, in this day of luxurious Forties, we believe that the Michigan outrivals them all.

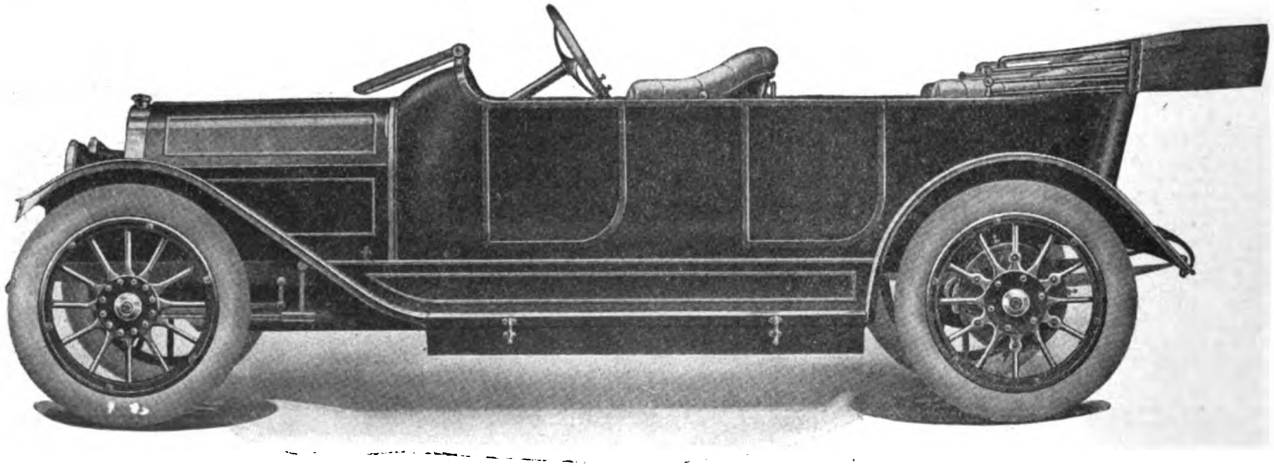
A Wonderful Price

The Michigan factory now has enormous capacity. Every detail of the car is built by modern machinery.

Through wondrous efficiency the cost of this car has been cut 30 per cent in four years.

Part of this saving has gone into extras. Part has been taken from the price. Now we offer this car with complete equipment at $1,585. And no other maker will meet it.

With this car at this price, the Michigan is bound to take first place among Forties. You can prove that in an hour's comparison.



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Michigan "40"

Cameron's Greatest Car

To W. H. Cameron, our designer-in-chief, is due the main credit for the Michigan "40." Cameron has built 100,000 successful cars, and all he has learned makes possible this wonderful machine.

To John A. Campbell this car owes its matchless body, its graceful lines, its finish, its upholstering. Campbell has designed equipages for kings, but this is his greatest achievement.

To an army of experts, selected by Cameron, we owe the strength, the simplicity, the over-capacity of every important part.

These men have combined to produce a wonderful car. And you'll find no car that excels it.

Remember these men when some maker tells you that his higher price buys something better. This is Cameron's best, and Campbell's best. No designers have ever excelled them.

Get All You Can

It is up to you this year, if you are buying a "40," to get all that you can, and pay the least that you need to.

Make careful comparisons. Watch the points that count.

Require big tires—as wide as the Michigan's—for that is the secret of small upkeep. Get four forward speeds, for the world's best cars now have them.

Get electric lights with dynamo. To add them afterward would cost $125.

Get a roomy car. Compare width of seats, size of tonneau, length of wheel base. Get a comfortable car. Note that Michigan cushions are 14 inches deep. Michigan springs are wide and long.

Compare the brakes, the axles, and every vital part. Here you should have big margins of safety—ample for 60 horsepower.

Compare all these things which mean care and cost, and you'll find no car in the Michigan class that comes anywhere near the Michigan price.

Send for our catalog, giving all the details, and showing the various bodies. Then we'll tell you where to see the car.

MICHIGAN MOTOR CAR COMPANY, Kalamazoo, Mich.

Owned by the owners of the Michigan Buggy Company

Some of the Michigan Features

Four-forward-speed transmission
Oversize tires—35x4½ inches
Electric lights and dynamo
Center control—left-side drive
Motor, 4¼ x 5¼
Extra effective brakes—16 x 2¼ inches
Big, comfortable springs
Adjustable steering post
Adjustable pedals
Firestone demountable rims — extra rim
14-inch cushions
Rear cushion 50 inches long
Hand-buffed leather upholstering
Best curled-hair filling
Wheel base 118 inches
Nickel mountings
Large over-capacity, giving big factors of safety
Pressed steel, full floating rear axle
Axles sufficient for an 80-horsepower car
Genuine cellular-type radiator
Best mohair top, side curtains and envelope
Windshield built in as part of body
Electric horn
$50 speedometer, 4-inch dial
Special foot rail
Swing robe rail
Rear tire irons
Complete tool equipment
Tool chests under running boards

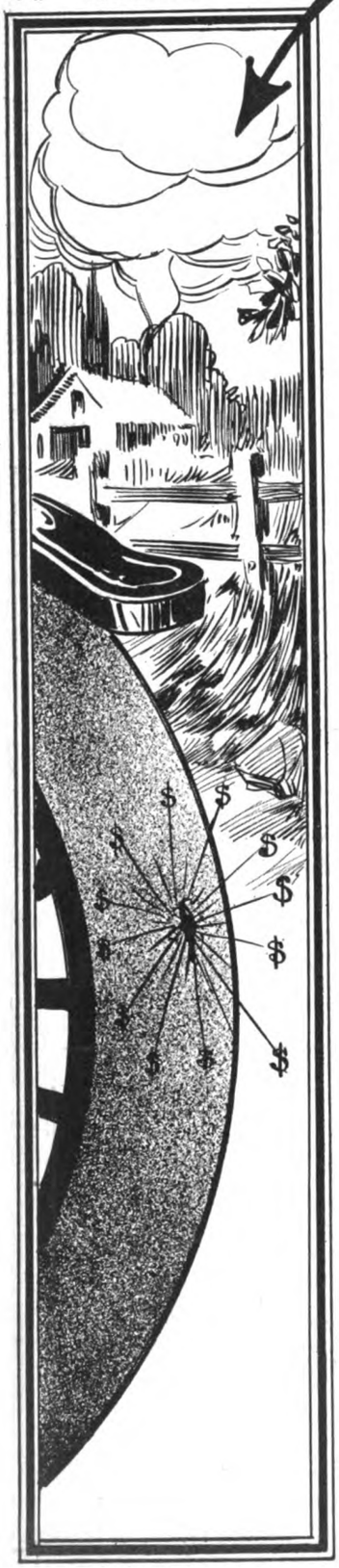
There is such a difference of opinion about the various types of self-starters that we have not adopted any one type as regular equipment. We prefer to leave this selection to the buyer. We equip with either the gas or a positively efficient electric starter at a moderate extra price.

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Two Kinds of Blowouts

And too many of these

will make these impossible





Now, Honestly, Mr. Car Dealer, Do You Believe in Looking into the Merits of an Article, Which Just Possibly May Be of Value to Your Customers?

When you want to sell a Car the biggest snag you run against is Tire Expense. You can't help that. If the man is a little doubtful about buying his car he is going to hesitate longer before giving you his order.

The automobile using public know what tire expense is. They know that it pays to repair tires and take care of them.

Why not get a little inside information on this subject so that you can talk to them advantageously about something in which they have already shown their interest—incidentally this information will help you overcome their objections.

Influence your customers to use Gilmer Tire Repair Pliers, and tire blow-outs will be practically eliminated on their cars.

It is no stretch of imagination to say that the use of Gilmer Tire Repair Pliers, in many cases, will double the life of your customers' tires, for Gilmer Tire Repair Pliers prevent the small cuts and abrasions from growing and developing into blow-outs that ruin the tire. Gilmer Tire Repair Pliers enable the operator of the car to thoroughly cleanse the numerous small cuts and abrasions to which his tires are constantly subjected, clear to the fabric—and then to insert pure, clean rubber gum, so that the cuts in the tire automatically close over this rubber, force it firmly against the fabric, and make the repair as strong as the original uncut tire.

Send to us today for our Dealers' proposition. We have some open territory that will enable you to make money.

G. WALKER GILMER, Jr.

GILMER TIRE-REPAIR PLIERS

52 N. Seventh Street
PHILADELPHIA, PA.

GILMER TIRE-REPAIR PLIERS

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"The Horn that's Made for the Discriminating"

TUTO HORN

THE TWO TONE HORN

Loud Signals Do Not Promote Safety.

THE great success of the dual service of the TUTO horn has demonstrated that it is not necessary to provide an extremely loud signal noise in order to promote safety in signalling.

¶ The low note of the TUTO horn is effective fully 90% of the time and completely displaces the bulb horn, while the louder signal is only necessary in cases of emergency. It requests the right of way in a low but firm tone and without undue disturbance, leaving the loud tone free for the one purpose—the emergency signal.

¶ The effectiveness of this loud note is enhanced by the fact that it is used less than 10% of the time and therefore commands attention.

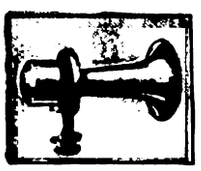
¶ Other horns, having only one loud note, must be reserved for emergencies, otherwise the familiarizing of the sound by constant use in regular service will defeat the very purpose of the emergency signal.

¶ When these other inflexible, one-note horns are used for emergencies only, a duplicate horn of low tone is necessary for regular service. Decency on the part of the car driver as well as laws and ordinances in various parts of the country, demand that the loud horn be reserved for extreme emergencies.

¶ Thus, when the one loud note electric horn is employed, it is necessary to supplement it with one of less power for regular service, requiring that two separate horns be mounted on the car and that separate points of control, such as two buttons or a button and a bulb, be mounted within reach of the driver. The going from one button to another or from a bulb to a button, is absolutely impossible in the case of an extreme emergency. Therefore, such a duplication of warning signals is confusing and of little utility for short range service.

¶ For safety in signalling, ease of operation, positiveness in action and neatness of installation, the TUTO horn offers the maximum of value. There is no one-half value or 10% service with the TUTO. It does all of the signalling of the car, and is 100% in service efficiency.

¶ The TUTO is the only two-tone horn—patented—so that no mistake can be made in specifying it for regular equipment on a factory output or for individual equipment on your personal car.



TUTO Horn, $25.00

The Dean Electric Co.

260 Taylor Avenue, Elyria, Ohio

"Look for Dean where Quality's seen"



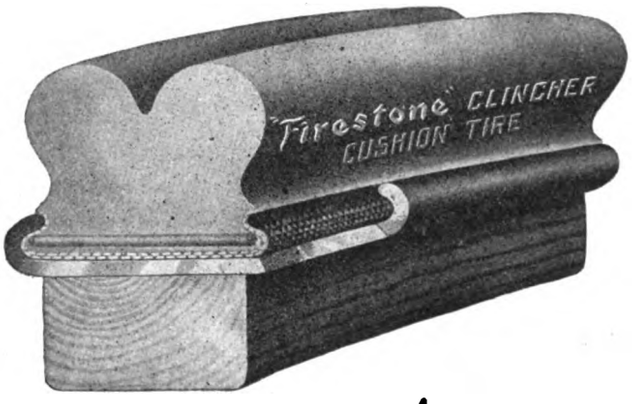
TUTO-ETTE $17.50

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Announcing

To Electric Car Owners

12% More Miles On Battery Charge



12% More Resilience —The Ride Supreme

Firestone

Clincher Cushion Tires

Fit Pneumatic Rims, Standard Clincher or Quick Detachable Clincher



TWELVE per cent more miles for every charge of your battery; the current economy of the ordinary electric pneumatic tire without the bother and expense of tire troubles.

And Resiliency, Comfort, Riding Pleasure never before approached in solid tires. We have the proofs, substantiated by test in America's leading electric car factories.

These proofs are obtained, before tire leaves our factory, by scientific tests. The tire on the wheel must measure to the standard established by exact road and load conditions. Get these procfs!

No matter how your electric is now equipped; you can quickly, easily and economically change to these Firestone Clincher Cushion tires without changing wheel or rim.

These tires are the ultimate accomplishment in solids.

The make-shifts of holes and blocked-out sections which substitute jerky spring and jolt for uniform resiliency are abandoned stages in Firestone evolution.

The over-hang design, the scientific proportioning of the Firestone Clincher Cushion, supported by the continuous body of Firestone supreme resiliency, make level ground of car-track or other obstacles.

Dual tread, in addition to increased cushion, gives secure protection against skid or slip. One section of tire prepares dry gripping surface for second section. Get our electric tire catalog and be convinced by the facts and figures based on scientific and practical proof.

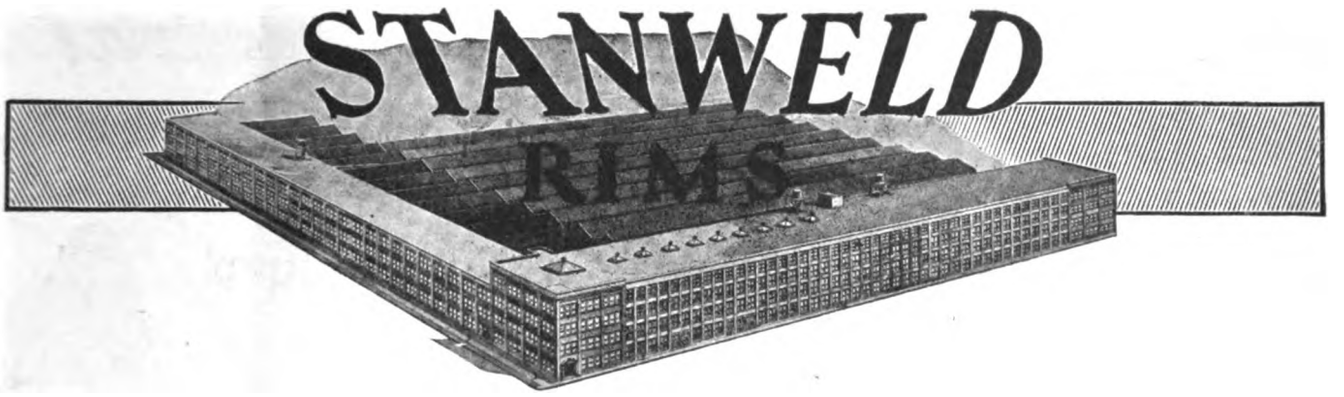
Direct Service Stations In All Cities

Call at the Firestone branch or agency in your city or town and have them equip your electric *now* and keep it equipped at a minimum cost for maximum service.

The Firestone Tire and Rubber Co., Akron, Ohio, And All Principal Cities

"America's Largest Exclusive Tire and Rim Makers"

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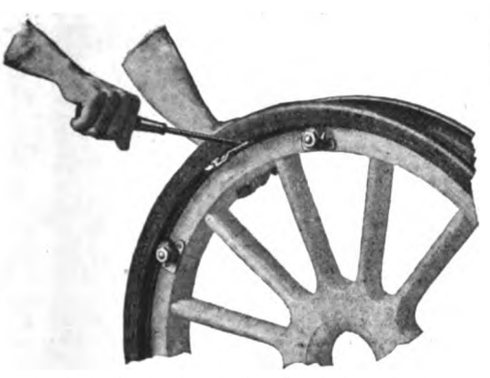


For Every Car For Any Tire

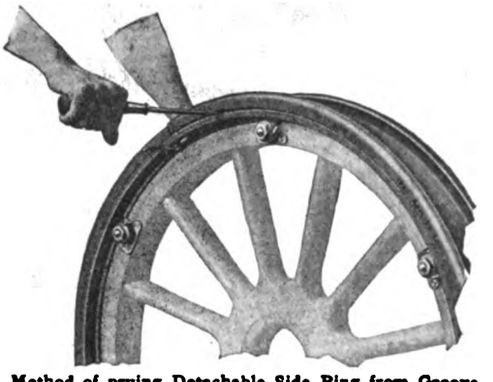
STANWELD rims are not the product of a self conceit.

Mechanically they fulfill every requirement of the car owner, car manufacturer and tire maker.

Structurally they are the culmination of rim making as evolved by the pioneers and masters of the craft.



Method of releasing Spring Latch from Lock

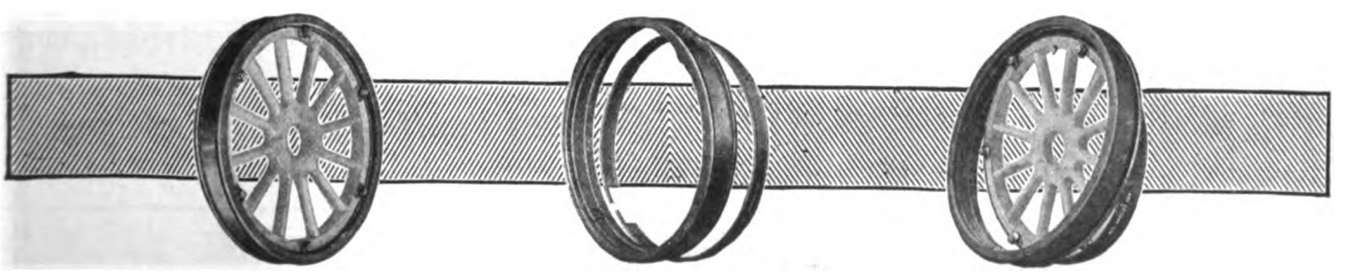


Method of prying Detachable Side Ring from Groove Note position of Latch

Not a part—not a piece of material—not a function but that is a proved betterment over all former types of rims.

Priced for the multitude and used as standard equipment on America's superlative cars, their destiny as universal equipment is assured.

The Standard Welding Co., Cleveland, Ohio



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NEWTONE SUPERIOR

The Most Efficient Motor Driven Horn to Sell at a Popular Price



Price $10

***Newtone Superior* has created a tremendous sensation in the automobile trade for its *Efficiency*, for *Price* and for *Economy*.**

It Is the Cheapest Strictly High Grade Motor Horn on the Market

It uses only 2½ amperes; a battery can last five months without recharging.

$1000 REWARD to the manufacturer, jobber, dealer or agent in the automobile trade who can produce or show us a motor driven horn now on the market of equal efficiency and quality to the ***Newtone Superior*** selling at our price [listed at ten dollars].

We claim to have the best motor warning device on the market at this price.

Eight years in the exclusive manufacture of auto signals—during which time we have made and sold over ***one million auto horns,*** and incidentally spent thousands of dollars in experimental work in perfecting our product—has made it possible for us to produce ***Newtone Superior,*** "The King of Them All."

AUTOMOBILE SUPPLY MFG. CO., 220 Taaffe Place, Brooklyn, N. Y.

America's Largest Auto Horn Manufacturers—Established 1903

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TRADE MARK Raybestos REG. U.S. PAT. OFF.

The Brake Lining That Made the Automobile Safe

The original and pioneer of all asbestos Brake Linings.

Every worth-while improvement in Brake Lining has originated with the makers of RAYBESTOS.

Our watchword is quality and Constant improvement of RAYBESTOS.

Get the best—no other as good.

It costs the car owner no more.

The name RAYBESTOS is stamped in every foot of the lining.



The Royal Equipment Co.

436 Housatonic Ave. Bridgeport, Conn.

We also make Duplex and Raymond Brakes and Gyrex, the Mixer.

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Opportunity Knocks at Every Man's Door Once

Are You Listening for the Knock Mr DEALER, or are You Taking Your Daily Nap?

We don't quite agree with the artist who drew this illustration—at least so far as Opportunity's work for us is concerned. We have been sending her out with this Warm Hand Wheel proposition for a number of weeks—and she has been finding plenty of investigative dealers with the door wide open.

It is the live, aggressive, investigative dealer who achieves the greatest measure of success. There are two other types. First, the ultra optimistic who loads up with unsaleable stock; second, the ultra pessimistic dealer who considers every improvement in his line unsaleable. The ultra optimistic has his shelves filled with dead stock—the pessimist has empty shelves—both lose.

The Warm Hand Wheel is a success—wherever it has been introduced it is selling. Wise dealers recognize its value even before they see it. It is good for the investigative dealer—for the fellow who buys everything—for the fellow who refuses to handle anything.

Opportunity is knocking at your door, Mr. Dealer, and she bears a practical, common-sense device that will rob winter driving of half its terror.

Think this over—here is a heated steering wheel that can be put on any car in twenty minutes' time. Once installed it is always ready to give comfort and satisfaction during the coldest kind of weather, as well as in those seasons of the year when the frost nips the fingers.

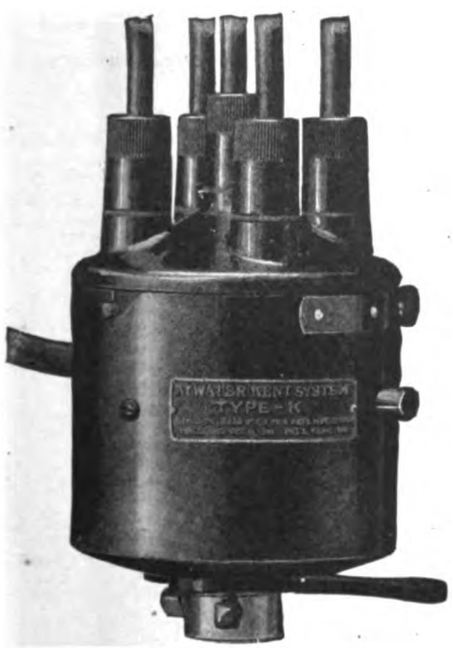
Your opportunity is here to go on record as selling a proposition that will appeal to every driver of pleasure car or truck in your vicinity. If you refuse to investigate then be sure there is somewhere near you the "dealer from Missouri"—he is going to be shown and we are going to show him. You had better get in line now.

THE WARM HAND STEERING WHEEL CO., 527 Fifth Ave., New York

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The New Atwater Kent Ignition System

With Automatic SPARK ADVANCE



DISTRIBUTORS

New York.....E. J. Edmond Co.
Chicago.....Motor Car Supply Co.
San Francisco, Clausor & Lyon M. S. Co., Weinstock-Nichols Co.
Milwaukee.....Julius Andrae & Sons.
Omaha.....Omaha Rubber Co.
Chattanooga.....Sanford Bros.
Dallas.....Fisk Co. of Texas.
Denver.....Auto Equipment Co.

Of extreme interest to every motorist

THE Automatic Spark Advance feature of the Type "K" Atwater Kent System is a long stride forward in ignition practice.

With this device, the control of the spark timing is entirely automatic (although the hand lever can be used if desired). This means that the spark is always properly timed to get the greatest possible power from the motor at any speed from three to seventy miles per hour.

No human mind can follow accurately the speed variations in an automobile motor and accordingly regulate the spark setting to get the best results.

The automatic spark control of the Atwater Kent System is more than human in its performance—it is sensitive to the slightest variation in speed—immediate in its response and positive in its action. The operator can forget his spark lever, knowing that his spark is being better regulated than he can do it himself.

The increased safety due to the automatic retarding of the spark for starting is alone more than sufficient to commend it to the modern motorist.

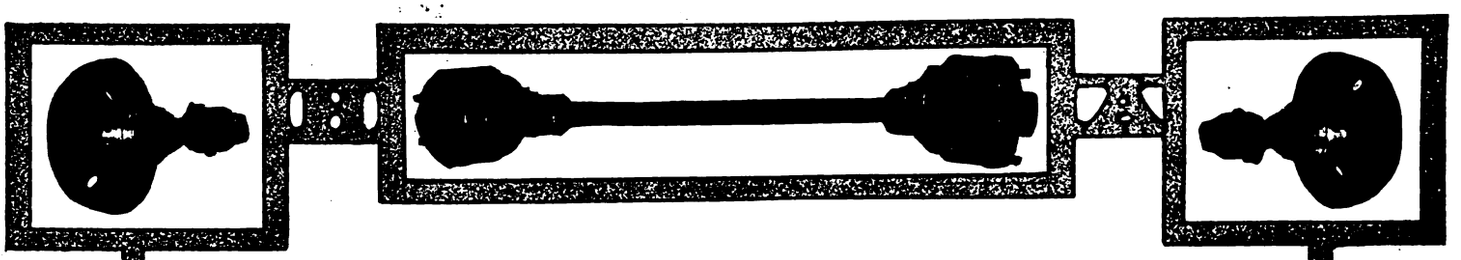
The Type "K" System is especially adapted for use in conjunction with lighting and starting equipment, or as sole ignition in place of the high-tension magneto. We regard it as being fully up to the high standard of merit for which Atwater Kent equipment is known.

Interesting Booklet D and detailed information sent upon request.

Atwater Kent Mfg. Works

4940 Stenton Ave. Philadelphia, Pa.

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New Light Car Universal

We are presenting here another member of our growing family of Universal Joints, Type F-300 Drive Capacity 25 horsepower.

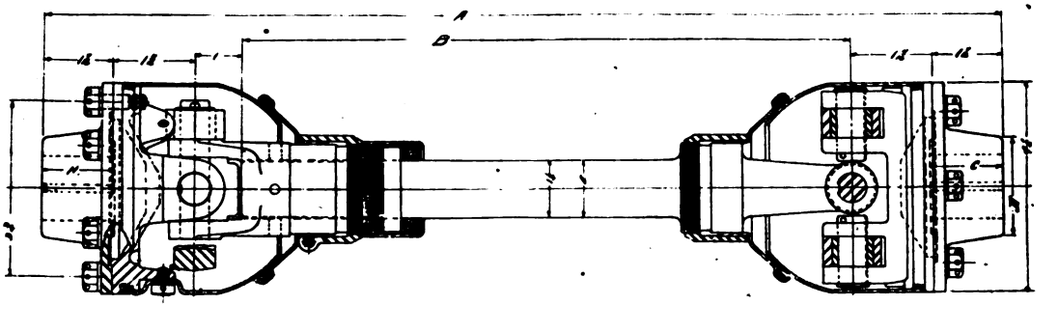
This installation is particularly suited to light cars and like all Hartford products, it embodies the highest degree of efficiency.

Note that high carbon steel drop forgings are used throughout with working parts hardened and ground to gauges with very close limits consistent with the work they are to perform.

Type F-300 drive is absolutely interchangeable and will give a greater factor of safety than usual with ordinary drive and it will successfully meet and withstand an unusual amount of overload and abuse.

Are you in the market for such a drive at this time, or will you be in the near future? If so, communicate with us and we will, if you desire, have our representative call to go into consultation with you.

Forthcoming advertising will give details concerning other types of universal joints.



SPECIFICATIONS:

A—Total overall length of complete drive.
B—Center of T-Head to end of square. Made to any length specified.
C—Length of Rear Hub, Standard 1½". Maximum length 1½".
D—Diameter of Transmission Hub, Standard 2⅛".
E—Diameter of Propeller Shaft 1¼".
F—Width across flats, Standard 1", 1⅛", 1 3/16", 1¼".
G—Width across corners, Standard 1¼", 1 7/16", 1½", 1 9/16".
H—Length of Transmission Hub. Standard 1½". Maximum length 1½".
I—Diameter of Straight Round Hole or Maximum Diameter Taper Hole.
J—Taper per foot: Standard 1½", ½", ⅝".
K—Keyway. Standard ¼"x⅛". 5/16"x5/32", ⅜"x3/16".

J. S. BRETZ CO., New York, Detroit, Sole Selling Agents.

CONE CLUTCHES

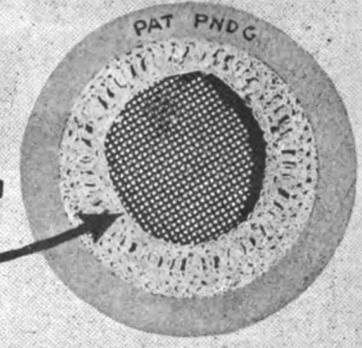
HARTFORD AUTO PARTS CO.
HARTFORD, CONN.

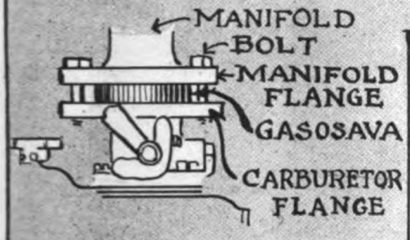
UNIVERSAL JOINTS

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GASOSAVA

The Wick Does the Trick





Saves From 30% to 50% Gasoline

Increases Power up to 40%

Eliminates Carbon Troubles

Keep Soot From Spark Plugs

Dealers—It Retails for $3

This is a Live Seller for Live Sellers

and you know, Mr. Dealer, how responsive your trade is to the little things on the car that accomplish big things.

Gasoline Comes High

It is one of the biggest expense items in the running of the car and if you can locate a car owner in your territory who will not pay $3 for a device that we guarantee to save as high as 40 per cent. on his fuel bills—give us his name.

Your Trade Needs the Gasosava

because it means economy of fuel, conservation of speed, power and flexibility and freedom from carbon trouble. Install it on any car and the owner will be your firm friend—and that means more and bigger sales for you.

Easy to Install

Simply insert Gasosava between carburetor and manifold (just as you would a gasket) and screw up tight.

Write today for our general agents' proposition and territory.

GASOSAVA COMPANY, Inc.

1270 Broadway **NEW YORK**

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Knox

MARTIN TRACTOR



Maximum Carrying Capacity
Minimum First Cost
Minimum Maintenance
Minimum Turning Radius

What It Is

Not a Theory But a Proven Success in a Year's Gruelling Work. Many in Successful Operation. 5 to 10 Ton Capacity. Full Details Explained in Tractor Catalog. Send Today.

A motor unit that may be attached to any heavy vehicle designed to be drawn by horses; the combination making a five-wheeled motor-drawn vehicle.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO EXCESSIVE COST OF RUBBER TIRES. Wagons have been doing good work for many years on steel tires and there is no reason why they will not continue to do so when drawn by the tractor; the heaviest part of the load is always carried on steel tires.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO EXCESSIVE VIBRATION ON STIFF SPRINGS. All working parts of the tractor are carried on springs as resilient as those of a pleasure car.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO SUDDEN STARTING OR STOPPING OF HEAVY LOADS. The cushioning of the shock between the engine and the load is one of the most important advantages gained, (fully explained in catalog).

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO NEGLECT ON ACCOUNT OF INACCESSIBILITY OF PARTS—all parts of the tractor being more accessible than on a touring car.

IT SAVES HEAVY MAINTENANCE CHARGES due to frame twist. The tractor accommodates itself to all road unevenness.

The single front wheel can be turned at 80 degrees angle, enabling the driver to back to any position or turn completely around in the narrowest street.

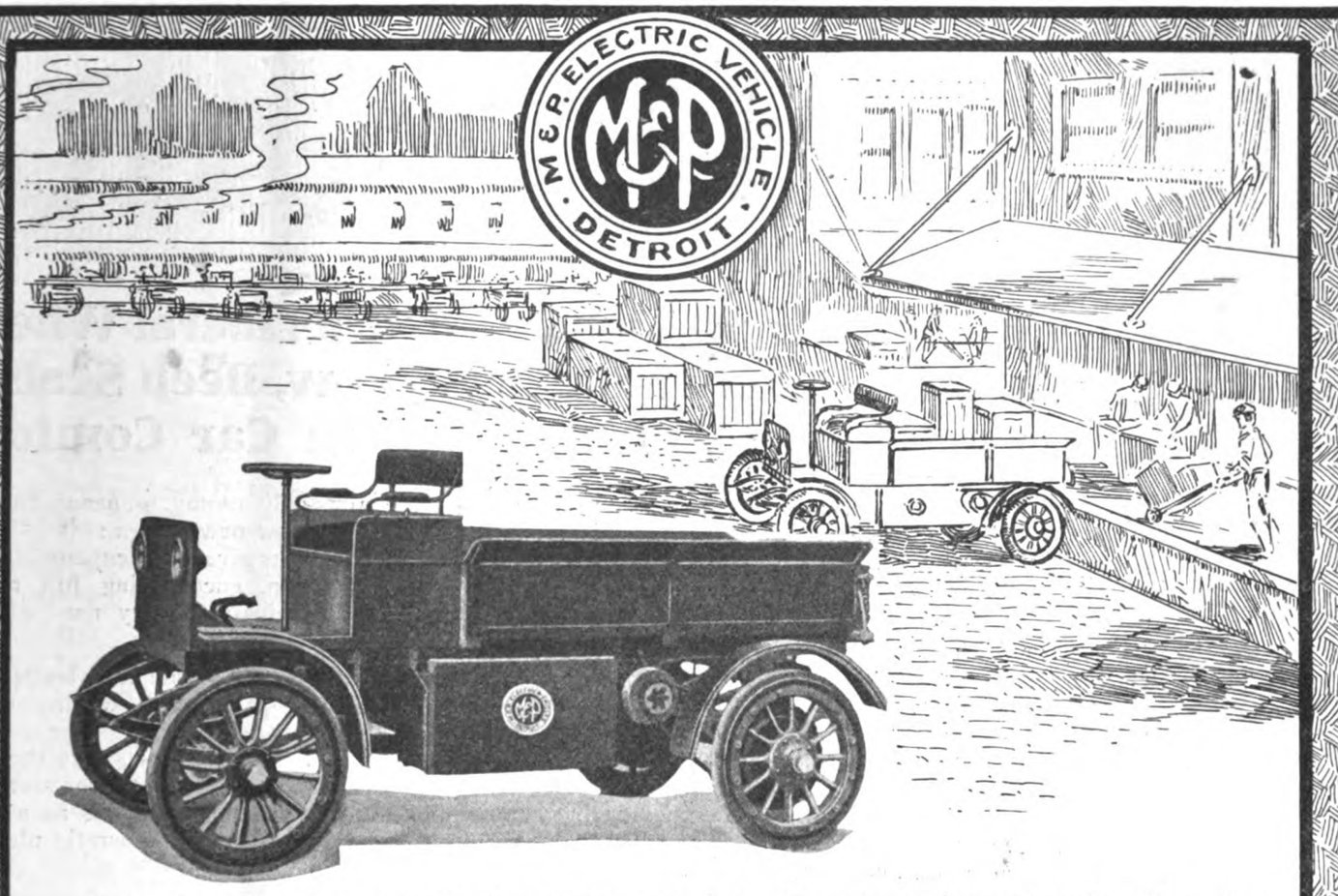
A Knox Martin Tractor costs less than a two-ton truck; has a capacity of 5 to 10 tons.

KNOX AUTOMOBILE COMPANY (Tractor Department) Springfield, Mass.

BRANCHES—New York, Chicago

AGENTS—The Knox Martin Tractor Is the Greatest Proposition in the Commercial Field Today. Fully Protected by Patents.

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Present orders from our dealers prove our first advertised contention, in effect that there is a fast growing demand for an electric light delivery truck, sold at a price within reason.

The M & P One Thousand Pound Electric is filling this demand just as fast as we can turn out the orders, and up until this time we are keeping pace.

You Ought to Sell the M & P Truck

and you can sell it, for in your territory there are many concerns now using horse-drawn delivery wagons who can be shown the business-building economy of the M & P Electric Truck.

Here Are the Facts

This truck carries a normal load of one thousand pounds with a safe margin for excess weight. It is the last word in electric truck design embodying every feature that conduces power, economy, flexibility and simplicity.

It will render more and better service at less cost for operation and upkeep than will any gasoline delivery wagon costing seven or eight hundred dollars more—make us prove this.

Its operation is devoid of complication—any boy can run it after a very brief period of instruction.

All parts are standard and interchangeable, although on account of sturdy construction and the large margin allowed for safety on all parts, the necessity for replacing parts is reduced to a minimum.

A Big Opportunity

Now, Mr. Dealer, this truck sells stripped for $1450—with Express Body for $1500, with Enclosed Body for $1600. And you will find after the first sale has been consummated that there will be other merchants in your vicinity who will at once see the advisability of replacing the horse-drawn wagon with an M & P Electric.

Write and let us tell you of the exceptional proposition we have to offer. It is one you can ill afford to ignore.

M & P ELECTRIC VEHICLE COMPANY Franklin and Dubois Sts., Detroit, Michigan

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KisselKar

Electric Started and Lighted—Extra Liberal Wheelbase—Extra Roomy Tonneaus—Low, Deep Seats—A New, Distinct Achievement in Car Comfort.

The 1913 KisselKar surpasses every previous idea of car comfort. Every factor of comfort is incorporated in the 1913 KisselKar to a liberal degree not before equalled in any other automobile.

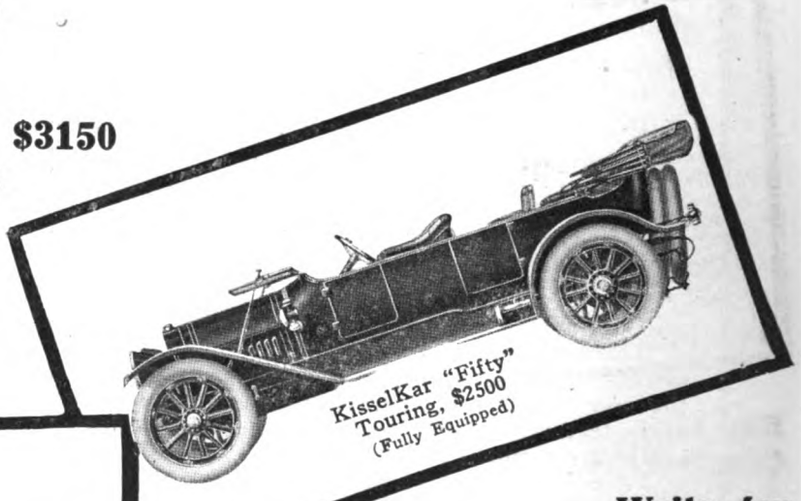
Every model has an extra generous wheelbase, which, besides emphasizing the low, rangy design, bridges the irregularities of the road in a way that gives the KisselKar a steadier, milder and conspicuously rare riding comfort.

Big wheels, big tires, shock absorbers, springs designed according to weight of each model, and eleven inches of seat upholstering absorb the road vibration. The liberal wheelbase permits the unusually roomy tonneaus and the extra depth of the low new design seats. These exceedingly deep seats give the occupants a quarter-reclining position, encouraging full restful relaxation, and eliminating every need or tendency to brace against sideway.

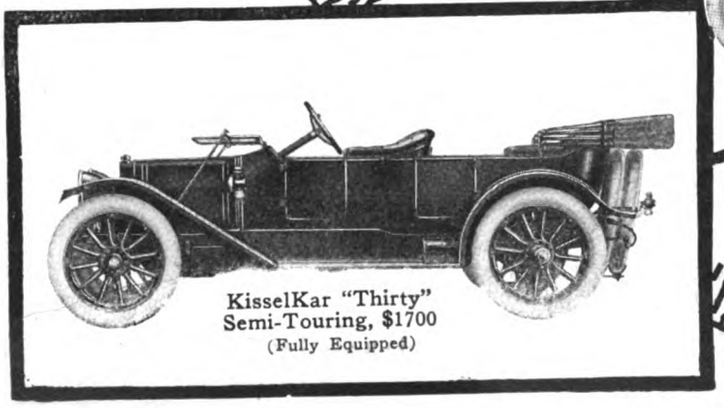
The new construction of the 1913 bodies, the graceful outbending panels, the swelling curves which replace edges and corners—the general modeled effects of the new bodies give the 1913 KisselKar the distinction sought after since the automobile has been considered less as a mere machine and more as the artistocratic pleasure vehicle of modern life.

"Thirty" $1700
"Forty" $2000
"Fifty" $2500
60 H. P. "Six" $3150
Fully Equipped

Every Inch a Car



KisselKar "Fifty" Touring, $2500 (Fully Equipped)



KisselKar "Thirty" Semi-Touring, $1700 (Fully Equipped)

Write for 1913 Catalog

The 1913 KisselKar catalog completely illustrates and describes the entire KisselKar line—all models—two passenger Semi-Racer Runabout, Semi-Touring, Touring, Coupe, Limousine, and five passenger Coupe.

Kissel Motor Car Co.
159 Kissel Avenue
Hartford, Wis.

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1913

Flexible Power

The flexibility of the motor gives the KisselKar a wide range of throttle control, which makes all ordinary driving a mere matter of shifting the throttle lever or pressing the foot accelerator. You can throttle down on "high" to a creeping pace in traffic and take hills at easy, normal speed without rushing, or shifting gears. Gear shifting with a KisselKar is occasioned only by extremely difficult road condition. For all average driving, the flexible KisselKar motor drives smoothly and silently on "high" gear as fast or as slow as you want to go.

The KisselKar electric starting and lighting system is perfected and refined.

The slightest touch to the foot lever in the driver's compartment starts the KisselKar. No chance of a starting failure. A full year's exhaustive testing has proved the KisselKar electric self-starter to be dependable under all conditions of weather. It requires no attention—brings no extra strain on the engine. It is powerful enough even to run the big 60 H.P. "Six" considerable distance.

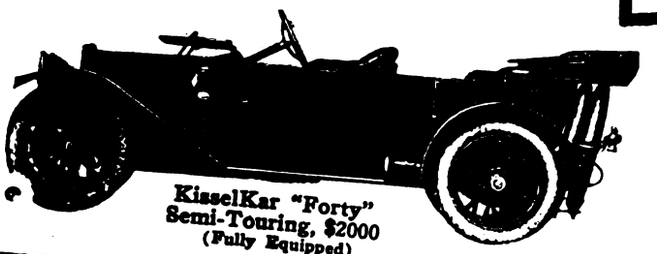
A touch of the foot lever causes the electric motor to turn over the engine vigorously. Then when the engine is running under its own power, the electric motor cuts out and the electric dynamo cuts in, charging storage batteries for ignition, lighting and future starting.

Electric lights more than twice as powerful as ordinarily used on automobiles are a feature of the system.

The KisselKar electric system is mechanically refined in every detail—the **perfected electric** starting and lighting system.



KisselKar 60 H.P. "Six"
Semi-Racer, $3150
(Fully Equipped)



KisselKar "Forty"
Semi-Touring, $2000
(Fully Equipped)

Big Line of Commercial Vehicles

The KisselKar commercial line includes 1500-lb., 1, 2, 3, 4, 5 ton trucks, **delivery wagons,** fire department apparatus, omnibuses, etc. All type bodies—**special bodies designed** and built to meet the needs of any service. KisselKar Trucks have capacity and reserve power to meet extremest demands. Competitive road tests have demonstrated KisselKar Trucks to be from 15% to **20% more economical** of fuel than average trucks. Lock on differential equalizes power between rear wheels, so that a slipping wheel can not absorb all the power and stall the truck.

KisselKar Service

KisselKar service is supplied and directed by the manufacturers. Specially constructed and equipped buildings at principal points of the United States are maintained as service-centers, co-operating with selling representatives in giving a complete detailed service to every KisselKar owner. This national organization of service-centers brings the owner in close touch with the manufacturers. The result is unusually low running cost, low maintenance and slow depreciation, and the fullest realization of motoring pleasure. Following is a partial list of KisselKar branches and agencies:

Boston New York Chicago Milwaukee
Kansas City Los Angeles Minneapolis
St. Paul St. Louis Dallas

Philadelphia, Cleveland, Detroit, El Paso, San Antonio, New Orleans, Baltimore, Omaha, Butte, Denver, San Francisco, Seattle, Portland, Duluth, Buffalo, Pittsburgh, Hartford, Conn., New Haven, Albany, Troy, Montreal, Quebec, Toronto, Winnipeg, and 200 other principal points throughout America.

Kissel Motor Car Co.

159 Kissel Avenue
Hartford, Wis.

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1913 Marion $1475

The Men Behind the Marion Are Men Who Have Done Big Things

THEY have contributed largely—yes, very largely—to the successful building of eleven big strong automobile companies. Today the earmarks of their energy and ability are conspicuous in many of America's most noted cars.

They have now pinned their faith to the Marion, have banded together in the greatly expanded Marion Company, determined to make the Marion 37-A the greatest motor car value of the year. The Marion organization is genuinely co-operative. Every executive is a partner, drawing only a living salary. In other words, every one of them is staking his name, time, experience, brains and reputation upon the definite success of this car.

Moreover, they are winning. In fact, they have won. Their car is here! You can see for yourself what wonderful results have come from the united efforts of such a body of real workers.

This car shows for itself. Look at it. Measure it. Feel of it. Ride in it. You will find that its every line, its tone and refinement, reflect the genius of an able engineer. Its workmanship and finish prove the builders' wonderful attention to detail.

The high quality of materials, the generous proportions of the car as a whole—and the price—indicate the policy of a company building for the future as well as for today, and determined to give its patrons the fullest measure of real value.

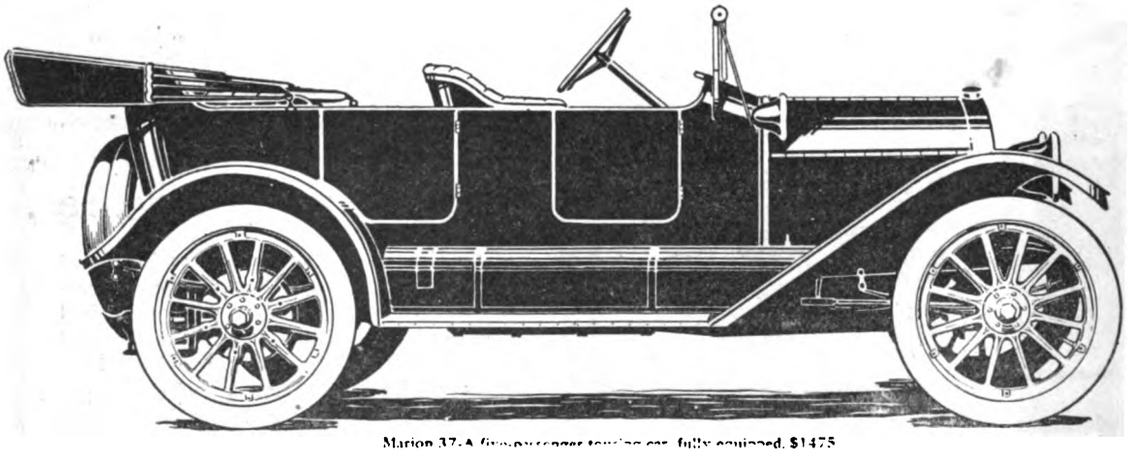
You can boast of owning a Marion. Park it beside cars of the highest price and you will be proud of it. Quality is apparent in every line. In completeness of equipment, grace and dignity, beauty of finish, and strength and durability, it is a car which justifies our every promise to you.

It is a large five-passenger car with luxurious upholstering. Lots of width, lots of breadth. You have the option of rich brewster green or deep wine color—either is exclusive. Its metal trimmings are nickel plated, its wood trimmings mahogany. Long wheel base, and springs of flexible imported steel make it a car with exceptional riding qualities.

Of its mechanical construction you need have no concern. It has been simplified and refined through ten years of manufacturing. Its standardization is self-evident. Its superiority is proven by the fact that Marion owners are always touring.

For those who want a larger and more powerful car we build the Marion 48-A—$1850—fully equipped. For the "speedy boys" we have the famous Marion "Bobcat," a mile-a-minute roadster—$1425—fully equipped.

We can not begin to enumerate here all the points you will note and instantly like about the 1913 Marion line. Let us send you illustrated literature in regard to these cars, giving their full detailed specifications. Write to us today.



Marion 37-A five-passenger touring car, fully equipped, $1475

Important Features, Marion 37-A

UNUSUALLY COMPLETE EQUIPMENT: Disco self-starter; Prest-O-Lite tank; Warner speedometer; dynamo electric lighting system; Q. D. demountable rims, one extra; ventilating plate glass windshield; mohair top, boot, storm curtains; tire irons, tools; concealed tool boxes; nickel-plated trimmings.

MOTOR: Four cylinders, cast in pairs, long stroke, 30-40 horsepower; bore and stroke, 4 x 5 inches; dual ignition; automatic carburetor steering column adjustment; constant level oiling system (circulating); 3-point suspension.

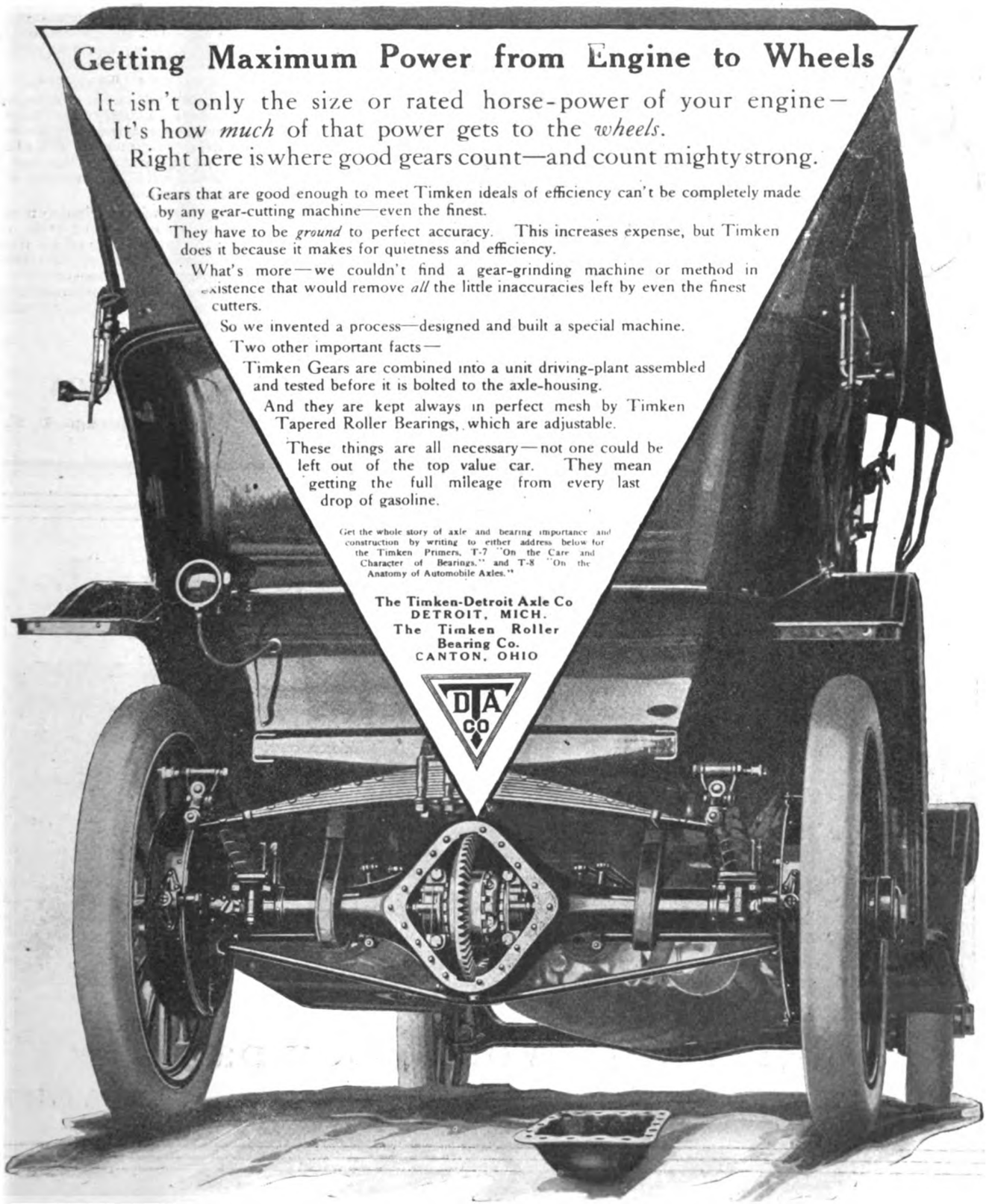
CHASSIS: Wheelbase, 112 inches; cone clutch; 3-forward speed selective transmission; shaft drive; four double-acting brakes; artillery wheels, 34 x 4-inch tires; I-beam drop forged front axle; double trussed rear axle; front springs semi-elliptic, rear ¾ elliptic; strong steering gear.

To bona fide automobile dealers we offer the fairest sales agreement ever written. Ask us about territory. All Cars Guaranteed. All Fully Equipped. Prices f. o. b. Indianapolis.

The Marion Motor Car Co., 918 Oliver Ave., Indianapolis

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TIMKEN
AXLES & BEARINGS



Getting Maximum Power from Engine to Wheels

It isn't only the size or rated horse-power of your engine—
It's how *much* of that power gets to the *wheels*.
Right here is where good gears count—and count mighty strong.

Gears that are good enough to meet Timken ideals of efficiency can't be completely made by any gear-cutting machine—even the finest.

They have to be *ground* to perfect accuracy. This increases expense, but Timken does it because it makes for quietness and efficiency.

What's more—we couldn't find a gear-grinding machine or method in existence that would remove *all* the little inaccuracies left by even the finest cutters.

So we invented a process—designed and built a special machine.

Two other important facts—

Timken Gears are combined into a unit driving-plant assembled and tested before it is bolted to the axle-housing.

And they are kept always in perfect mesh by Timken Tapered Roller Bearings, which are adjustable.

These things are all necessary—not one could be left out of the top value car. They mean getting the full mileage from every last drop of gasoline.

Get the whole story of axle and bearing importance and construction by writing to either address below for the Timken Primers, T-7 "On the Care and Character of Bearings," and T-8 "On the Anatomy of Automobile Axles."

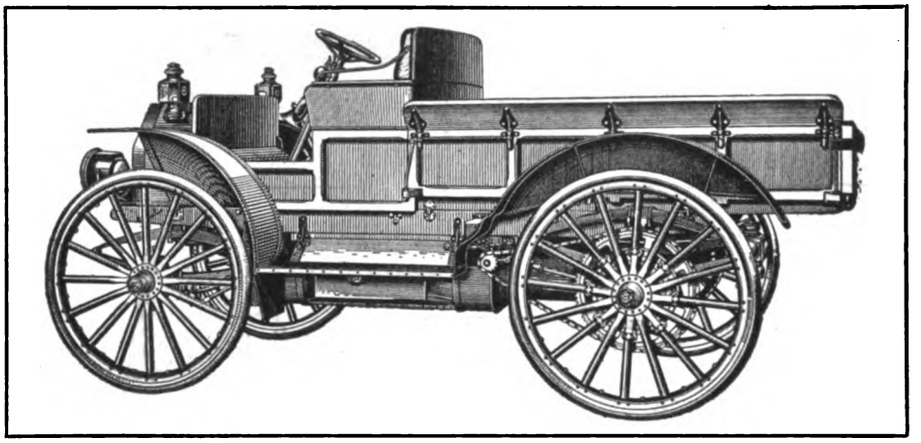
The Timken-Detroit Axle Co
DETROIT, MICH.
The Timken Roller Bearing Co.
CANTON, OHIO

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Every Business Man Is A Prospect for the International Commercial Car

Every man who wants to make quick deliveries, who has to transport tools or material for his work, or who has any kind of light hauling to do, is a prospect for an International Commercial Car.

The selling field of this handy, dependable auto wagon is unlimited because of its general usefulness, and because it gives such universal satisfaction. Wherever a sale is made it helps to close others. The endless chain thus formed makes the selling of this car the best opportunity of the present time for automobile dealers who see the trend of the times toward motor cars as business wagons.



The International Commercial Car has been justly called the car of wide appeal. Grocers, bakers, laundrymen, florists, painters, decorators, carpenters, contractors, plumbers, and men in a hundred other lines of business buy this car because of its fair price, low upkeep cost, efficiency and economy.

Any dealer who will distribute our selling literature among the business men of his town, or the farmers of his neighborhood, and will follow up that literature with practical demonstrations of what an International Commercial Car will do, can make a gratifying success of an agency for this car.

We invite correspondence from live dealers who want to be shown. Address a post card to

INTERNATIONAL HARVESTER COMPANY OF AMERICA
(Incorporated)

155 Harvester Building **Chicago, U. S. A.**

Care and Repair of Motorcycles



A TROUBLE SAVER
FOR THE
MOTORCYCLIST

Price 25 Cents



Bicycling World Company

1600 Broadway NEW YORK

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REMY ELECTRIC STARTER

The Remy Electric Company of Anderson, Indiana, invites correspondence with automobile engineers who are interested in a perfected electric starting device. It will be offered in various combinations with either electric lighting or ignition or both.

We have added the world's greatest electric-starting-apparatus engineer to our staff. As the real "Father of electric starting," he brings the most intelligent experience to be found, to our own board of experts.

Our experience coupled with unlimited facilities makes it logical for us to offer the first perfected, the first commercially successful apparatus for starting the gasoline motor—the REMY STARTER.

Address the

REMY ELECTRIC COMPANY

Factories—ANDERSON, INDIANA—General Offices

"The World's Largest Manufacturers of Ignition, Lighting, and Starting Equipment."

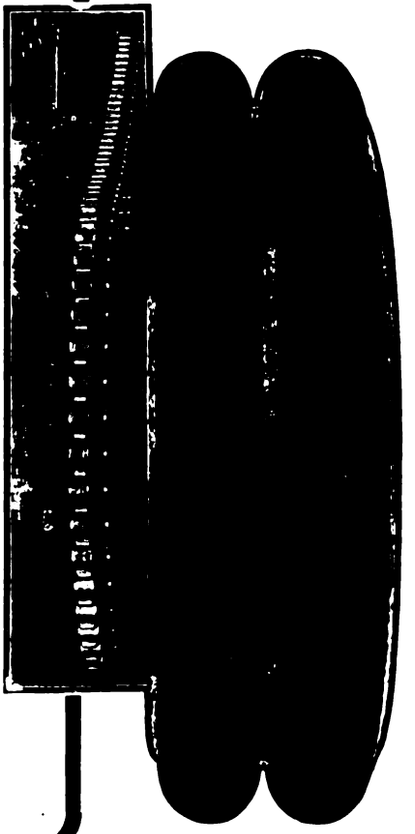


"WHITNEY" Chains
Are Used by the Leaders

Every "Whitney" Chain has a reputation back of it, a reputation of having been tested in the most trying service and never failing to make good.

The "Whitney" Cotter Detachable Chain has made for itself a record, which no other detachable type has approached. The shortening, lengthening or repairing is a simple matter, as the chain can be easily separated at each link and parts removed or inserted without the use of any special tool. It is therefore the Most Practical Chain for Motor Vehicles.

When making replacements insist on a "Whitney" Detachable.



THE WHITNEY MFG. CO.

HARTFORD, CONN.

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Talks on Selling Automobiles

No. 1

By the

Harman-Yount Co.

Kenton Harman, President

1788 Broadway, New York

The credit system hurts your business.

Ties up a lot of money as active capital.

People you could sell cars to say—"I haven't the ready cash. I am carrying so much money on my books. Perfectly good, you know, but slow. Now, if you could—"

But you can't—that is to say, you cannot extend credit to more than a few. You have enough capital to "carry" hundreds—in some other business. But not in the automobile business, where every sale means $500 or more.

Right here we step in and turn the credit system around upon itself, paradoxically, and make it help you. Our business is financing sales of automobiles to responsible people, who can afford them, but lack ready money.

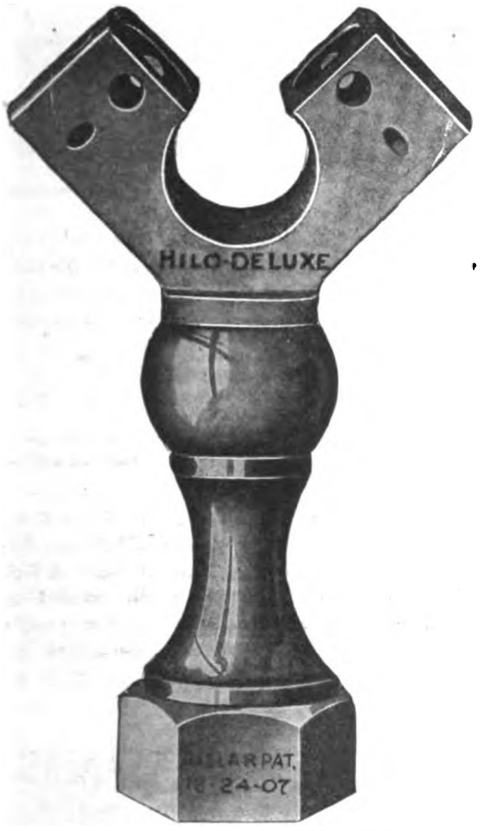
The manufacturer gets cash on delivery of the car. You get your commission at once, and the customer gets his car under the "easy payment" plan, paying us legal interest—not "installment house" rates.

You assume no risk. And we only extend Credit Where Credit Is Due.

Write today for details of how we can help you double your sales.



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HILO DE LUXE BURNER

The Largest Automobile Supply House in America

15—STORES—15

This is a Turn-Down Burner, i. e., you can reduce the size of the flame without carbonizing the burner.

The Greatest Gas Economizer and the Longest Lived Burner made.

Throw away your old-style burners and send us 80 cents for a pair of these.

Price 40 cents each, packed in individual boxes.

DO YOU WANT A COPY OF OUR 1912 CATALOG NO. 22?

The Most Complete of the Kind. **Mailed Free on Request.**

CHAS. E. MILLER

Home Office: 97-99-101-103 Reade St., New York City

MANUFACTURER, JOBBER, EXPORTER AND IMPORTER

Order From Nearest Branch, Address Chas. E. Miller.

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NEWARK, N. J.—274 Halsey Street.
SPRINGFIELD, MASS.—Bridge and Dwight Sts.

THINK THIS OVER

very carefully and read it twice, if necessary.

Is there any part of an automobile engine, or any other gas engine, that is more important to its efficiency than a Valve?

Your engine leaves the factory running smoothly and sweetly—tuned up to its highest power. Perhaps the valves pit—warp—go out of shape—fail to hold compression. Then the power diminishes, and what can be more aggravating to the driver, who has known the fullness of the pulling power of his motor, than to have it grow less and less?

You cannot slight this part by putting in an inferior product—valves that will give trouble, or even break from inexperience in their manufacture—valves of unsuitable material, not suitably heat treated.

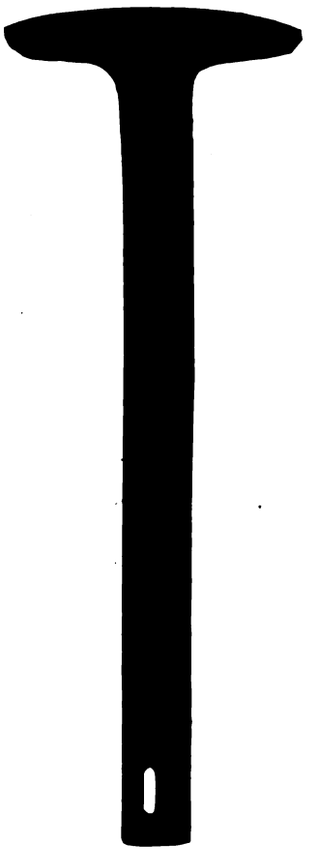
Too much is at stake, and a slight extra cost at the outset, which is the exception, may save you many times over a probable later expense.

This Company, with the experience of many years as a guarantee, will furnish you with properly made valves, of the materials best adapted to your requirements.

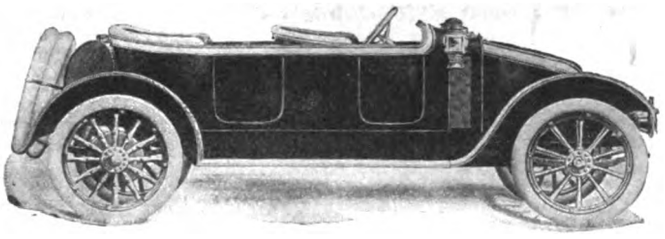
Not only QUALITY, but efficient SERVICE is a factor—surely there is a satisfaction in getting the kind of work you want—when you want it.

THE ELECTRIC WELDING PRODUCTS COMPANY

CLEVELAND, OHIO



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The Features the Buyer Wants in Distinctive and Distinguished Cars

CROXTON

Croxton cars incorporate all of the features for which the buyer looks in the new season models.

Moreover, many of these have been in use on our cars for five years; so, with us at least, they are not experimental.

Others—which some day we predict will be widely adopted — are yet exclusive to the CROXTON.

These are even more valuable to you in a sales way than those which have now become more or less common in other cars.

A glance at what follows will show you that no car is more complete, of more advanced design or more completely equipped.

Short Turning Radius.

Extremely long and flexible Springs.

Quick Detachable Demountable Rims.

Electric Starting and Lighting System.

An extremely long stroke motor; improved ignition system with automatic spark advance, dispensing with spark lever on steering wheel.

Improved Thermo-syphon cooling system.

Radiator protected from damage and from mud and water splashing by being placed at rear of motor; no hot air from radiator passes over motor. Improved oiling system, left hand drive with steering gear of new design. Center control. Cltuch and transmission enclosed as a unit. Gasoline tank incorporated with cowl dash. Motor protected by hood from dust, dirt and water.

Particularly attractive and distinct body lines.

We are now located in our new factory, with the best and latest machinery, and most complete facilities

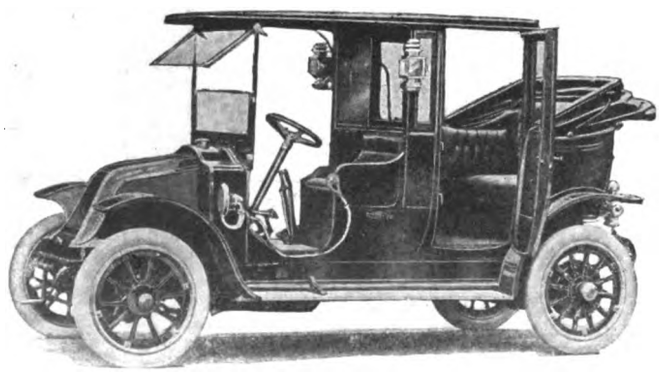
Our Sales Force is yet to be completed by the addition of a few good dealers.

Full details and specifications will be mailed for the asking.

The Croxton Motor Car Co.

Washington, Pa.

J. P. STOLTZ, President



BENZ

Since the introduction of BENZ cars to the motoring public of America no car has attained such world-wide supremacy as to its construction, standing up quality, and material. The new type of 35 and 50 H. P. BENZ models are the last word in automobile construction.

The noticeable features of this type of BENZ cars include the offset crank shaft, smokeless oiler, and SILENT CHAINS instead of timing gears.

The BENZ Carrosseries are noted for their beautiful lines and thorough comfort.

To those desiring AGENCY of this car the Benz Company will offer special terms. We want RELIABLE, ENERGETIC agents to further our interests for both BENZ pleasure cars and BENZ-GAGGENAU trucks, which today stand recognized by those who know, as the leading 6-ton truck. Wire or write us, no matter where you are.

Our PRICES compete with LEADING AMERICAN makes.

BENZ AUTO IMPORT COMPANY OF AMERICA

250 West 54th Street New York, N. Y.

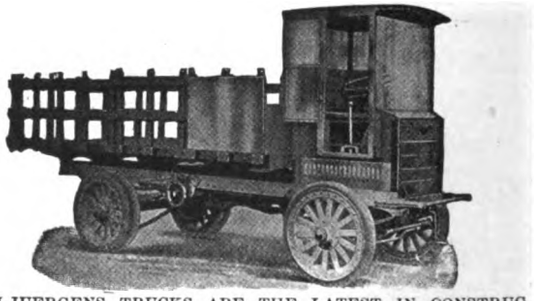
Direct Branch of Benz & Cie., Mannheim, Germany.

Lauth-Juergens

Lauth-Juergens Trucks are Delivery Insurance

QUALITY DURABILITY

ONE, TWO AND THREE TON CAPACITY



LAUTH-JUERGENS TRUCKS ARE THE LATEST IN CONSTRUCtion, most powerful in operation and the motors are guaranteed against defective workmanship and material for the life of the truck. They are positively the highest class trucks made. Two cylinder, one-ton, four cylinder, one, two and three-ton. Four speeds forward, Hess-Bright ball bearing transmission made in our own shops of the finest tool steel, three-piece disc clutch, covered by patents owned by us. Send for 1912 Catalog and specifications. Prompt delivery on all models. Large publicity campaign just begun. Our quality will do the rest.

Reliable Agents: Secure Your Territory for 1912 at Once.

The Lauth-Juergens Motor Car Co., Fremont, Ohio.

Branches and Agencies

BOSTON—David Abrams, 131 Portland St.
NEW YORK—West Side Garage & Motor Co., 160-162 101st St.
CHICAGO—The Lauth-Juergens Motor Car Co., 2630-32 Wabash Ave.
NEWARK, N. J.—Merchants Motor Car Co., Essex Building.
DETROIT, MICH.—Bierl Auto Truck Sales Agency, 453 Dix Ave.
DISTRICT OF COLUMBIA AND VICINITY—Bowles Motor Sales Co., Inc., 1608 14th St. N. W., Washington, D. C.

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Dependable Deliveries



DELIVERY dates are of utmost importance. Delay in shipments means loss of money.

We guarantee prompt deliveries.

Warner Quality and Warner eight-year old reputation for making highest class gears is back of the product.

Car makers interested in the Quality and Merit that means absolute safety and satisfaction will do well to write.

We modify our designs to meet detail requirements, or build to approved designs on season quantity specifications.

Philadelphia, Glenwood Av. and 2nd St.
Detroit, 628 Ford Building

Warner Gear Co.
Muncie - Indiana

Cleveland, Ohio.

Mr. Auto Driver or Owner:

***Ever realize** how vitally important **Good Oil** is to your car?*

*You may have the best Automobile and equipment, but nothing is so **necessary as perfect lubrication.***

***Never** use any but the **best** Oil. You probably now use our*

"Euclid" Auto Cylinder Oil

*If not, you hardly know **real** satisfaction in driving your car.*

Be sure to ask for it next time. Sold by most of the large dealers.

If you cannot get it ask for sample or better still send us an order.

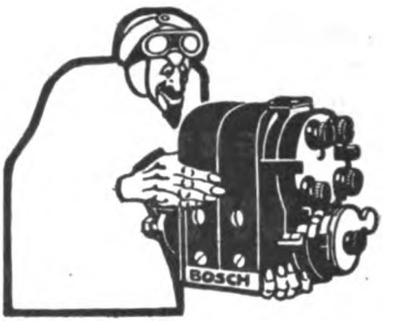
Freight paid on 10 gallons and up. Satisfaction guaranteed.

Yours truly,

The Reliance Oil & Grease Co.

Established 1888

Agents Wanted for Exclusive Territory



Bosch Magneto

Wins — Of Course

THE VANDERBILT CUP RACE

1st	Mercedes	De Palma	Bosch Magneto
2nd	Mercer	Hughes	Bosch Magneto
3rd	Mercedes	Wishart	Bosch Magneto

Every Vanderbilt Cup Race Since 1908 Has Been a Bosch Victory

THE GRAND PRIZE RACE

1st	Fiat	Bragg	Bosch Magneto
2nd	Benz	Bergdoll	Bosch Magneto
4th	Fiat	Oldfield	Bosch Magneto
5th	Mercedes	Clark	Bosch Magneto
6th	Benz	Burman	Bosch Magneto

Every Grand Prize Race Has Been a Bosch Victory

BOSCH PLUGS

Also Win — Of Course

THE VANDERBILT CUP RACE

1st	Mercedes	De Palma	Bosch Plugs
2nd	Mercer	Hughes	Bosch Plugs
3rd	Mercedes	Wishart	Bosch Plugs
4th	Stutz	Anderson	Bosch Plugs

Last Year's Vanderbilt Cup Race Was a Bosch Plug Victory Too

THE GRAND PRIZE RACE

1st	Fiat	Bragg	Bosch Plugs
2nd	Benz	Bergdoll	Bosch Plugs
3rd	Stutz	Anderson	Bosch Plugs
4th	Fiat	Oldfield	Bosch Plugs
6th	Benz	Burman	Bosch Plugs

Last Year's Grand Prize Race Was a Bosch Victory Too

Thus in the Test of Tests Bosch Magnetos and Bosch Spark Plugs reigned supreme. They evidence their supremacy not only during such trying performances as these, however, but particularly in the cars of private owners.

For 1913 Season
Specify Bosch Magneto and Bosch Plugs You Will Be Satisfied

ASK YOUR DEALER

Bosch Magneto Company

223-225 West 46th Street, New York

Detroit Chicago San Francisco Toronto

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All Tire Manufacturers will only guarantee their produce when filled with air at the recommended pressure.

GET A 1912

Twitchell

POSITIVE LOCK STOP

Air Gauge

With it you can get more mileage out of the Tires, because you can always keep them at right pressure.

The Twitchell Gauge is Tire Insurance for a dollar—Order one from your dealer or from us direct.

THE TWITCHELL GAUGE CO.
1256 Michigan Ave. CHICAGO, ILL.

In All the World No Car Like This

Ten successful seasons—the wonderful long stroke motor—added improvements and refinements give this wonderful car the greatest value ever offered for $1800. Read the list below of the most notable features of the

Dreadnought Moline M-40

10 inch more wheel base (now 124)
Electric Lights—Dynamo System
Five more Horse Power (now 40)
Improved Steering Gear
Gasoline Tank under Cowl—
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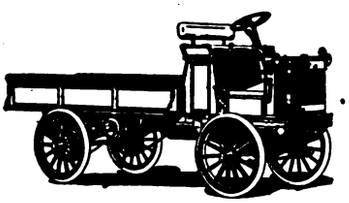
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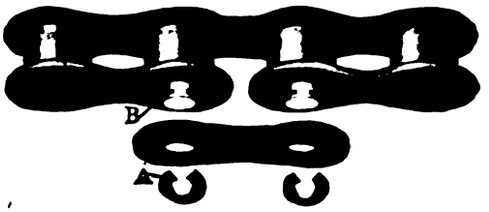
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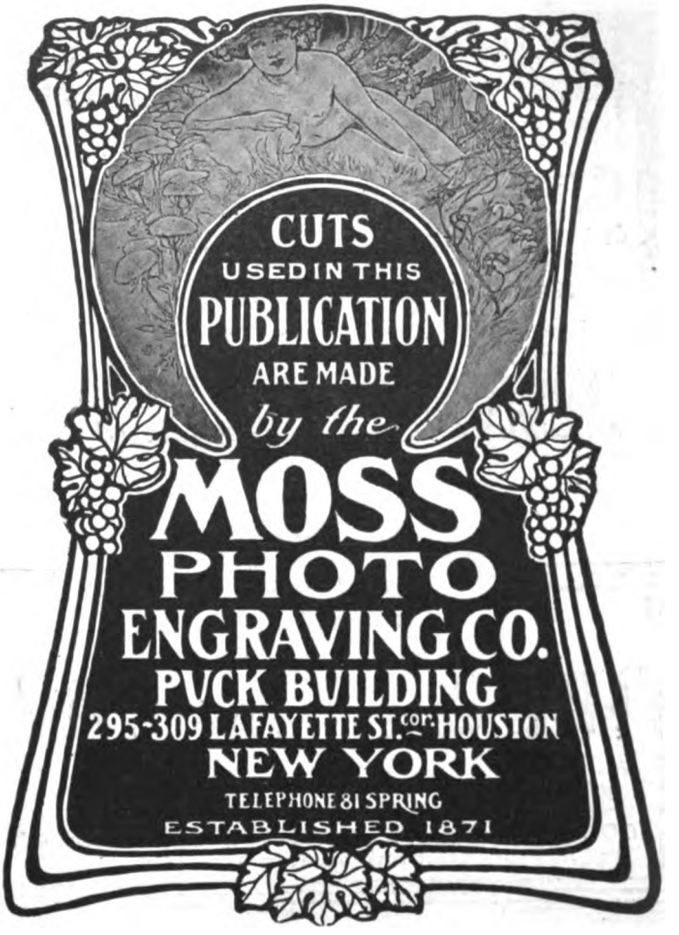
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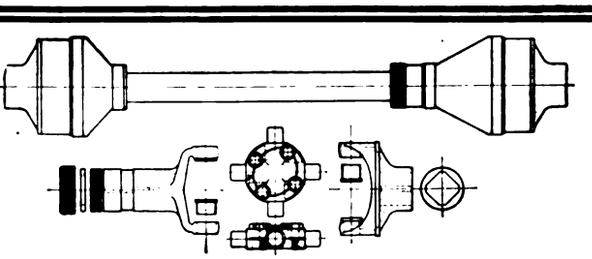


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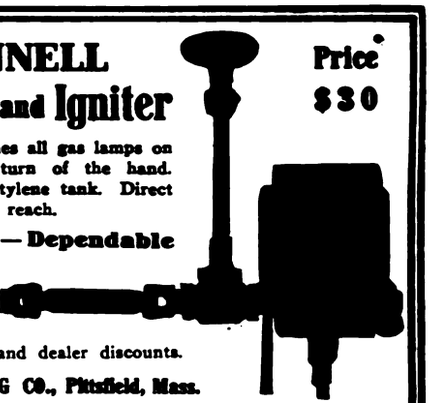
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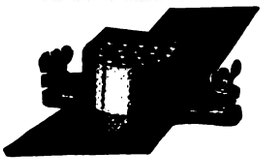
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ALL SIZES ANY PITCH

HYDRAULIC PRESSED STEEL CO.

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Standard Universal Rims



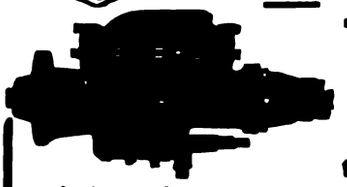
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$1,675	$2,150	$2,750

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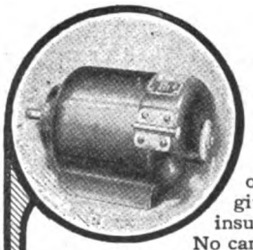
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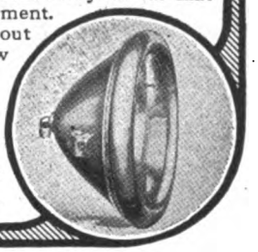


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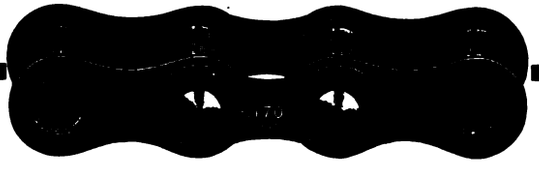
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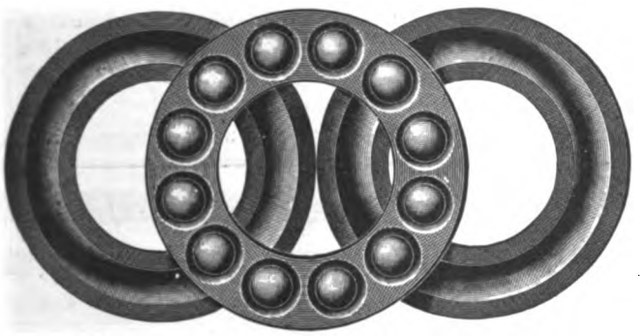
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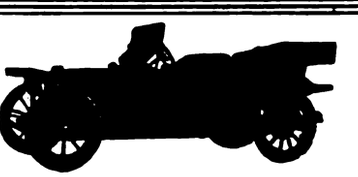


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Solars are made in all styles for oil, electricity, gas and in combinations.

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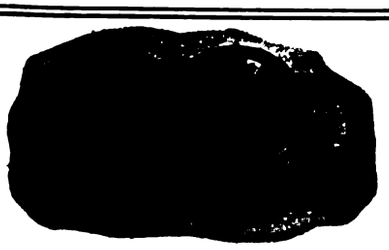
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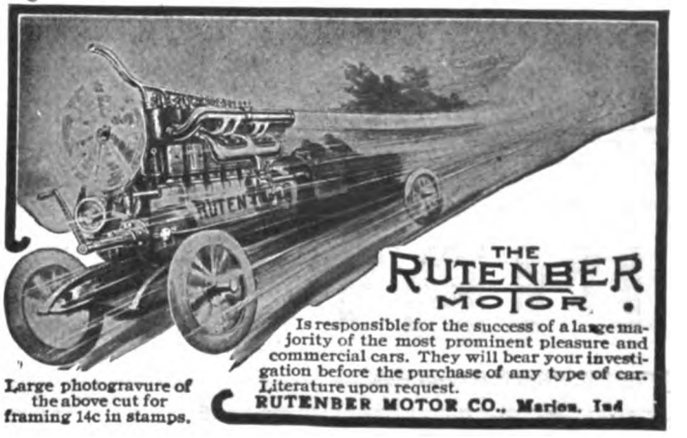
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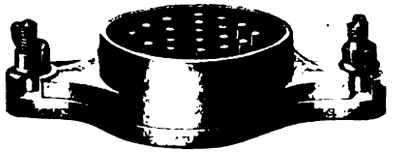
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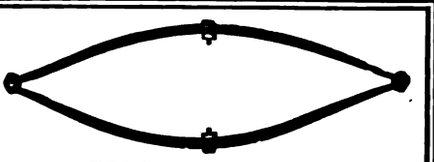
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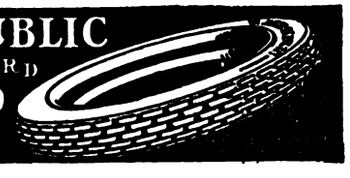
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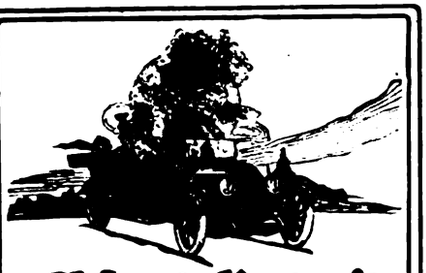
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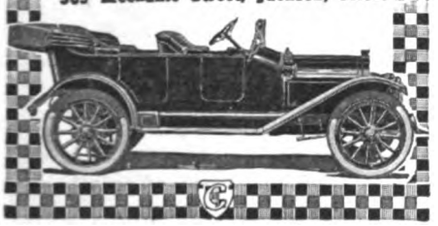
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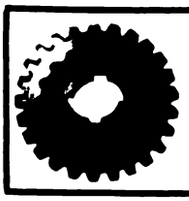
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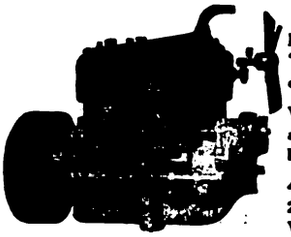
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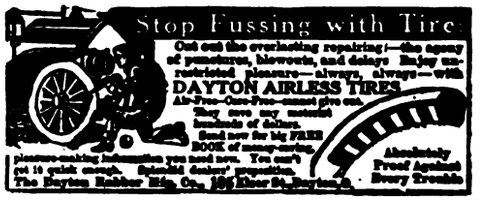
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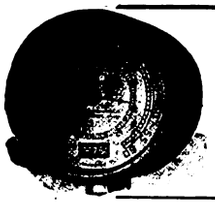
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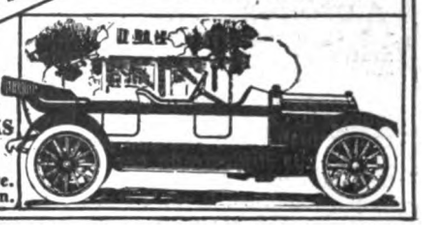
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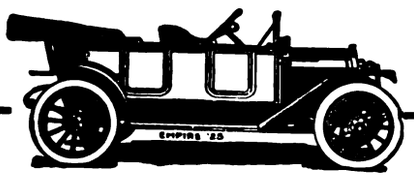
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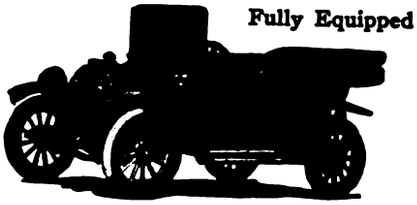
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WANTED—MANAGEMENT OF PACIFIC COAST BRANCH OF AUTOMOBILE FACTORY. CAN SHOW SPLENDID SALES RECORD FOR EIGHT YEARS. HAVE BEEN IN SOUTHERN CALIFORNIA TWENTY-FOUR YEARS AND AM WELL ACQUAINTED. AM PRACTICAL MECHANIC AS WELL AS SALESMAN. HAVE HAD EXPERIENCE IN THE MANAGEMENT OF BUSINESS. WOULD INTRODUCE GOODS INTO NEW TERRITORY. CAN GIVE BOND. ADDRESS, BOX 223, MOTOR WORLD.

WE SHIP SUDDEN." Prices lower and goods of best quality. We want your business on this basis. Plate glass windshield, $7.50; Mohair tops (give size), $10.00; 4-door bodies, complete, $5.00; side lamps, Castle make, $2.00; head lights, $10.00 kind, $3.10; auto trunks, $12.00 kind, $5.10; 32 x 3½ Goodyear tires, $14.00; 32 x 3 Morgan & Wright, $5.00. All kinds of goods at prices you can afford. State your needs. PURITAN MACHINE CO., 57 10th St., Detroit, Mich.

NEW CHEESE CLOTH REMNANTS, best polishing material, sold by the pound. Saves 40% of store prices. Price 38c. per pound in 50-lb. and 100-lb. bales. Agents wanted everywhere. AMERICAN MILL ENDS CO., Detroit, Mich.

FOR SALE—Four cylinder, 55 H.P. Foreign F. I. A. T., double chain drive, racytype roadster, nearly new, price $2,500. C. L. WHITING, 591 E. Main St., Rochester, N. Y.

WANTED—Auto truck, one ton less motor. G. R. DAVIS, Hagerstown, Ind.

APPERSON, 1907, 40 H. P., four seats; makes 60 miles per hour; everything new; bargain for ready buyer. A. C. HEWITSON, 101 West 66th St., Room 4, New York City.

WANTED—A second-hand D-4 Bosch magneto and synchronous coil, to be used on a 1911 50 H. P. American Traveler. Address SOMACO, care Motor World.

FOR SALE—Runabout in good running condition; 4-cyl., 28-H.P., good tires; will make a good delivery car; price $160. Can be seen at 432 Chicopee St., Willimansett, Mass.

FOR SALE—Palmer-Singer 6-60 motor and transmission complete, in good condition. DR. FRYER, Riverside, Wash.

WANTED—A high-grade engineer, preferably one thoroughly versed in automobile requirements. Only men with experience and a make good record need apply. THE TIMKEN-DETROIT AXLE CO., Detroit, Mich.

Why Dunk Way Pays.
1. We sell direct.
2. We have no branches.
3. We own our factories.
4. We buy in car loads.
5. We sell at small profits.
6. We supply everything.
7. We have repair parts.
8. We save you 50%.
9. We have Radiators, etc.
10. We have accessories.
11. We have 29,973 Customers.
12. We want you.
13. We want your address.
14. We are in Detroit.

AUTOPARTS MFG. CO.,
Detroit, Mich.
No Branches. Beware.

GARAGE—Established four years, for sale. Entrance on avenue and street front and rear, 200 x 41 ft. Has sixty cars on live storage, doing business of twelve hundred dollars monthly renting cars. Reason for selling, illness. STEVENS, 1337 Clinton Ave., New York.

WANTED—A first-class man to take the agency for the latest invention on the market, a rubber cover for automobile handles called Steerease; write for full particulars. Address DEPARTMENT E, GOODYEAR RUBBER HOSE AND PACKING CO., 221 Chestnut St., Philadelphia, Pa.

WILL sell or trade 60 foot mahogany motor yacht for automobile or real estate. 212 Niagara St., Buffalo, N. Y.

PEERLESS BACK AND CUSHION DRESSING.
A renovator for leather seats and cushions. Brightens the finish, softens the leather and does not crack or peel. Dries in 20 minutes. The Columbus Varnish Co., Columbus, O.

AUTOMOBILE BODIES, pleasure and commercial. Foredoors for open-front cars. Write for prices. AUTO SPECIALTY MFG. CO., 326 E. Market St., Indianapolis, Ind.

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AUTOMOBILE Cylinders reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

PEERLESS AUTO TOP DRESSING
Waterproofs mohair and duck automobile tops and curtains. Makes faded and stained tops look like new. Leaves the cloth soft and pliable. Dries over night.
The Columbus Varnish Co., Columbus, O.

The Dunk Way Pays.
Make your car up to date.
Our new fore door five passenger bodies completely finished, $52.50. New Mohair Tops at $13.50.
AUTOPARTS MFG. CO.,
Detroit, Mich.
No Branches. Beware.

FOR SALE—Caldwell Gasolene Lawn Mower; specification—4 cyl. vertical motor, dry batteries and Bosch magneto, Schebler carburetor, width of cut 40 in., weight 2,000 lbs. For complete description and price address INDIANAPOLIS MOTOR SPEEDWAY, Indianapolis, Ind.

PREST-O-LITE tanks wanted for cash. O'NEILL, 186 Putnam Ave., Brooklyn, N. Y.

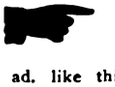
Dunk Says It's Best.
"Do It."
Detroit Self-Starter. Throw your Crank away. Sold direct. No agents. $10.00. Every Sale Makes a Friend.
AUTOPARTS MFG. CO.,
Detroit, Mich.
No Branches. Beware.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

SITUATION WANTED—Expert trouble man, long experience including electric self-cranking and lighting systems. Best of references. Only first-class position considered. Box 222, care Motor World.

CHAUFFEUR'S COMPLETE OUTFIT SACRIFICED—Consisting of elegant mink fur lined coat, Persian lamb collar, $35; pair of elegant bear robes, $15 each; raccoon cap, $5; pair of fur gloves, $4; pair or goggles, 50c.; 1 pair leather leggins, $3.50. Will sell separately or the lot, all new, never worn, original price, $225. C. CHASE, 118 East 28th St., New York.

Can you find a more profitable or inexpensive method than that indicated by the hand in the margin?



An ad. like this will cost you $1.35 for each insertion.

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SHELDON

Brake Equipment E-11

New Features Unusual Steel

Highest Braking Efficiency

Material

BRAKE SPIDER AND PARTS . Best Steel Castings
RADIUS ROD SHANK . . . Chrome Nickel Steel
FORK . . . . . Drop Forged Steel

SHELDON manufacturing policy is based on a fixed formula—"Ninety per cent brains—ten per cent. material."

The material specifications shown above, represent ten per cent—it doesn't take much figuring then to get at the big percentage of quality of design and excellence of workmanship back of this out-of-ordinary truck brake equipment.

Design

Both brakes on rear axles—eliminating strain through chain and bending moment on jack-shaft. Inside and outside brakes of the "wrap up" or self intensifying type—giving uniform wear. Brake levers, pin and shaft designed to keep deflection at a minimum. No lost motion between pedal and brake band.

Performance

The various sections have been figured for a load of 3,000 pounds or 50 per cent. overload, 80 per cent being on the rear, and skidding the rear wheels.

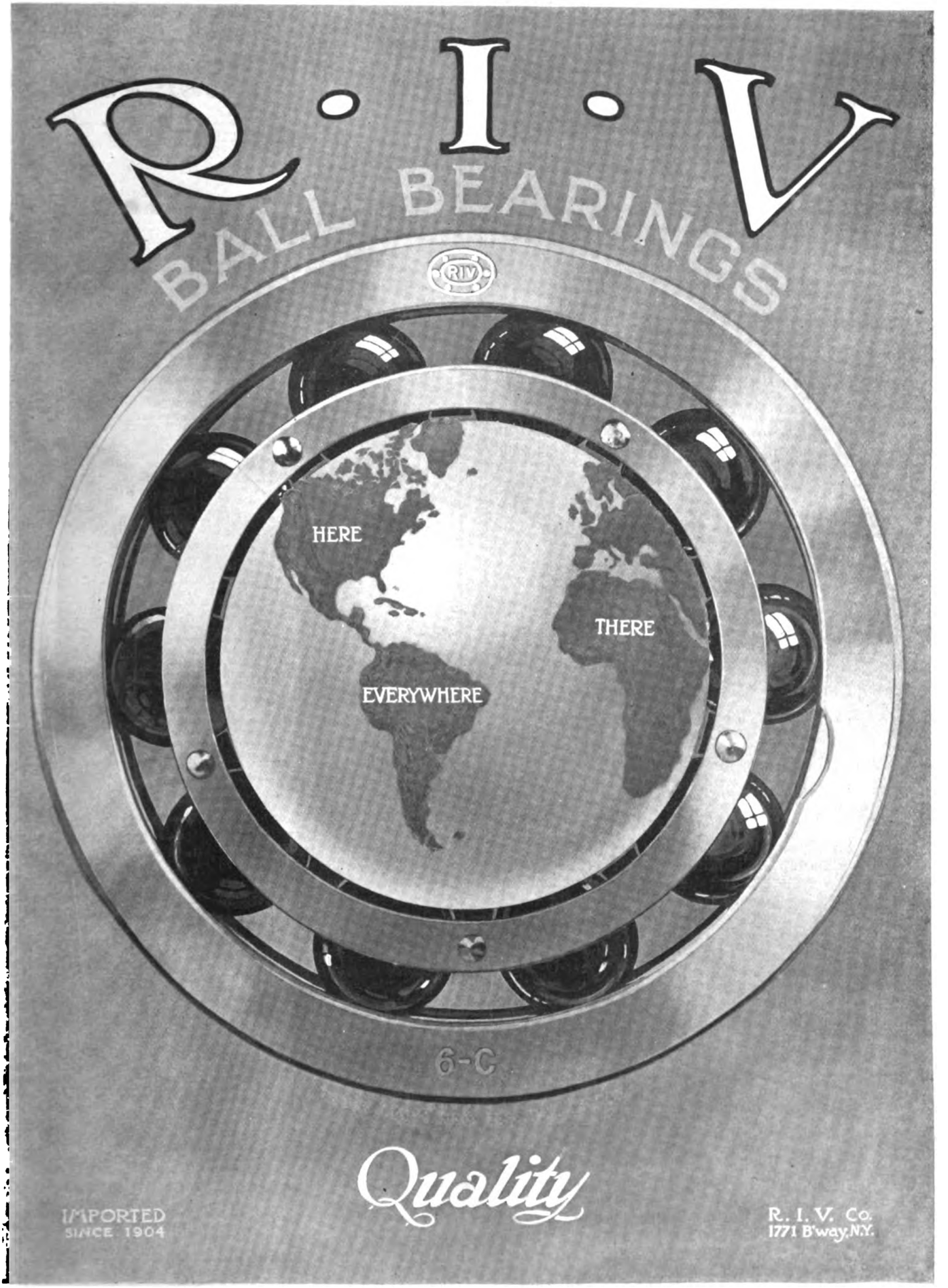
A pressure of 50 pounds on the foot pedal will bring the truck to rest in the shortest possible braking distance, and under these exceptionally heavy strains we have a factor of safety of at least 4 to 1 in the material, which spells dependability to the last degree.

The E-11 Brake is the strongest, most dependable and lasting in the whole field of Motor truck brake equipment.

SHELDON AXLE COMPANY, Wilkes Barre, Pa.

CHICAGO BRANCH: 68 E. 12th St. DETROIT BRANCH: 1215 Woodward Ave.

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Safeguard Your Investment in Your Gas Tank

If you own a Prest-O-Lite Tank, you are entitled to Prest-O-Lite Service, and it behooves you to see that you get it.

If you allow anyone to force an imitation tank on you in exchange for your genuine Prest-O-Lite you lose just as much as you would if your genuine tank was actually stolen.

But you can easily protect yourself against loss by remembering these points about

Prest-O-Lite
and Prest-O-Lite Service

Your genuine Prest-O-Lite Tank is in universal use and demand—therefore it can be exchanged when empty for a full one, ANYWHERE and ALWAYS. Imitations cannot.

Any tank that has a poor exchange service now—soon may have none at all.

Dozens of imitators of Prest-O-Lite have gone out of business, leaving users and dealers with tanks that could neither be sold nor refilled. The moral is obvious.

Protect yourself by looking for our label on exchange tanks. We can not be responsible for poor quality and short measure of gas in tanks not filled by us.

A TIP TO DEALERS

The majority of wise dealers handle Prest-O-Lite. They know it's the only safe proposition. Some few have yielded to the tempting claim, "more profit." The majority of these have been left with tanks that could neither be sold nor refilled. The few dealers who still trifle with imitations are finding it harder each day to sell them.

Remember that Prest-O-Lite has always been, and is now more than ever before, a source of good steady profit to you.

The Prest-O-Lite Co. 287 E. South Street Indianapolis, Indiana

Branch offices and Service Stations in all principal cities. Charging Plants in all parts of the country. Extensive foreign service.

Exchange Agencies Everywhere

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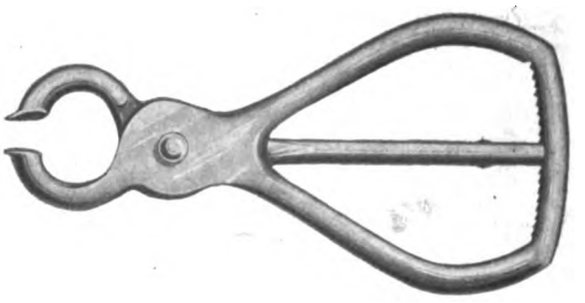
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Ever Have a Blow Out?

Of course you have. Then you know just what a blow out means to your customers—especially a blow out which comes when your tire has gone probably less than half the distance it should go. What is it worth to you to protect your customers against these blow outs?

Gilmer Tire Repair Pliers

PREVENT BLOW OUTS

They do this by enabling the car operator to repair properly the small cut and prevent them from becoming big cuts and blow outs. It requires but little time and scarcely any effort for your customer to double his tire mileage by using GILMER TIRE REPAIR PLIERS.

The need of Gilmer Tire Repair Pliers is so urgent that a simple showing of them to your customers means many sales.

Get your order in early so that you won't be disappointed later.

G. WALKER GILMER, Jr.
50 North Seventh Street Philadelphia, Pa.

GILMER TIRE-REPAIR PLIERS
PATENTED TRADE MARK

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Overland 1913

$985

Completely Equipped

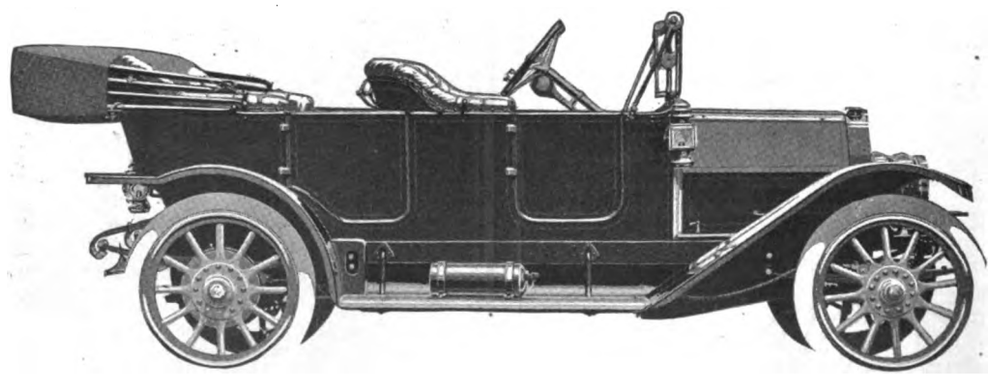
The Representative Car

Self Starter	*Remy Magneto*
30 Horsepower	*Warner Speedometer*
5-Passenger Touring Car	*Mohair Top and Boot*
110-inch Wheel Base	*Clear Vision Wind Shield*
Timken Bearings	*Prestolite Tank*
Center Control	

¶ In the Overland Model 69T we offer the representative car; the product typical of the times. It has been and is the constant aim of each individual automobile manufacturer to give the very greatest value for the very least money. The Willys-Overland Company, in its 1913 product, has done just that. This car is the most this or any other concern can offer at anything like the price. A comparison with other cars, costing $1200 drives this fact home. It is only our factory organization and equipment, systematized and complete to the last detail, and capable of an annual production of 40,000 cars, which makes this possible.

Our catalogue will tell you all about it; write today. Please address Dept. 50.

The Willys-Overland Company, Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, October 24, 1912 No. 5

WILLYS ADDS $10,000,000 BUT REPUDIATES MERGER

Capital Increased to $25,000,000 and Stock to be Offered to Public—Willys, However, Will Remain in Full Control.

It became known late last week that the Willys-Overland Co. was about to increase its capital from $15,000,000 to $25,000,000, which fact promptly caused the circulation of highly colored reports that John N. Willys was on the point of effecting a merger of more or less far-reaching scope.

As on several previous occasions his remarkable growth during the last three years had given rise to stories that he had a gigantic merger in view, the reports found more or less credence, particularly as in Chicago financial circles it was openly stated that unnamed Detroit interests were involved in the combination.

When he was reached, however, Willys himself promptly punctured the bubble which had been blown for him. Others near to him had been non-committal or evasive, but he was in New York yesterday and, when interviewed by a Motor World man, he did not attempt to deny that the capital of the Willys-Overland Co. would be increased to $25,000,000, as stated. He did deny, however, that he had the remotest idea of effecting a combination with anyone, or that any changes of material moment in the several properties which he owns are in view.

The increased capital, $10,000,000, is represented wholly by common stock, of which $5,000,000 has been sold to the New York banking house of William Salomon & Co., who also have acquired $2,900,000 of preferred shares and $5,000,000 of the common. Willys himself retains $10,250,000 of common stock and a large block of the preferred, and he will remain in full control.

Arrangements practically have been completed for the listing of the Willys-Overland stock on the New York Stock Exchange, which means that a block of it shortly will be offered for public subscription.

The refinancing plan applies to the Overland, Garford, Gramm and Kinsey companies, in Ohio; the Federal Motor Co., in Indianapolis, and Morrow Mfg. Co., in Elmira, N. Y., all of whose stock is held by the Willys-Overland Co.

In August last the Willys-Overland capital was increased from $6,000,000 to $15,000,000, of which $5,000,000 was preferred stock, the new capital being employed further to expand the already remarkably large properties which Willys has amassed and built up in a manner and in such a short space of time as to make the world take notice of him.

Ward Adds Strength to King Company.

Artemus Ward, the New Yorker who purchased the assets of the King Motor Car Co., of Detroit, in which he previously was interested, has reorganized its internal affairs to such good advantage that the company is now on a sound financial basis and its 1913 models ready for delivery.

Two of the new men whom Ward has brought into the organization are J. G. Bayerline, who has been appointed manager, and T. A. Bollinger, who has been made factory manager. Both formerly were identified with the Warren Motor Car Co., of which Bayerline was general manager for three years. He also had experience with the Pope, Oldsmobile and Hudson companies. The car will continue to bear the name King and the reorganized company will protect King owners on the guarantees issued by the old concern.

To Make Rutenbers Across the Border.

The Rutenber Motor Co., of Marion and Logansport, Ind., has acquired a plant in Chatham, Ont., where Rutenber engines will be manufactured for the Canadian trade. G. W. Bowen, the new president of the Rutenber company, will be its head.

OPPOSITION TO U. S. MOTOR REORGANIZATION DEVELOPS

Minority Stockholders Object to $24 Assessment—But Plan Progresses and Flanders Enters Into the Transactions.

Opposition has developed to the proposed plan of reorganization of the United States Motor Co., but when the Federal court on Monday next, 28th inst., is asked to approve the plan the opposition is unlikely to prevail before the ponderous bulk of the stockholders and creditors who are prepared to acquiesce in the proceedings and help the big but embarrassed corporation to regain a sound financial footing.

On the day in court, which is the time the receivers are due to render a report, the minority stockholders are expected to enter a protest against the proposal that shares be assessed $24 each, their position being that such funds should be made available through a bond issue instead of an assessment. Several courses are open to them in an attempt to delay proceedings, the most probable being that they will ask an adjournment for the purpose of examining the receivers' report.

Meanwhile the reins of the United States Motor Co. have been taken from the hands of Benjamin Briscoe, as president, and the reorganizers for several weeks have been seeking far and wide for a man to manage the reorganized corporation. The office of general manager had been tendered to George W. Bennett, of the Willys-Overland Co., and several other well-known men in the trade, all of whom refused it. In due course, Walter E. Flanders, president of the Flanders Motor Co., and the best press-agented man in the industry, came to the notice of the reorganizers and at last accounts he was not only due to become general manager of the United States Motor Co. but was to take with him into the

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organization his own Flanders Motor Co.

This turn of affairs will provoke smiles on the part of all those who are familiar with inside conditions and if the negotiations are consummated, as appears likely, it will cause some of those concerned to release long pent up sighs of relief.

Under the reorganization plan the Central Trust Co. of New York, 54 Wall street, has been made the depositary for all debenture bonds, bond scrip certificates, notes and creditors' claims of those who wish to enter into the reorganization plan. At the time of deposit 10 per cent—$2.40—of the $24 assessment must be paid.

A syndicate headed by Hallgarten & Co., bankers at 5 Nassau street, has agreed to underwrite the new stock and will purchase for $5,720,996 the voting trust certificates representing the stock allotted to assenting stockholders in both the Motor and Columbia companies. The syndicate's commissions, it is said, will be in the neighborhood of $1,500,000.

The new stock, although yet unissued, is figuring on the New York curb in Broad street, where the traders of "blue sky" tendencies have been trading in the new paper "when, as and if issued." Saturday last the prices were 1st preferred 75, 2nd 40 and common 10, but when the rumors of a minority protest began to permeate the "street" these prices fell, and on Tuesday of this week were first preferred 68 to 72, 2nd 35 to 38 and common 9½ to 10.

Denies Alco Sale is Contemplated.

During the past week rumor has been free with the affairs of the American Locomotive Co., the general trend of the rumors being to the effect that the big corporation was about to divorce its locomotive and automobile interests and that the latter would be disposed of to unnamed parties represented by J. W. DuB. Gould and S. G. Averill. The latter is said to be related to the Harriman family and Gould to the Harvey Fisk family, which made it appear that enormously wealthy interests were involved in the alleged transaction.

It transpires, however, that Gould and Averill are efficiency engineers and that they have been engaged in fine-combing the Alco establishment, with a view of placing it on a better basis, and for that purpose several times have visited the factory in Providence and the offices in New York City, which visits apparently gave rise to the report.

W. H. Marshall, president of the Locomotive company, declared to a Motor World man that there is absolutely no basis for the rumors, and that the company had no intention of disposing of its automobile interests or any of its stock holdings; nor are official changes contemplated.

BARLOW'S CHARGES FAIL BUT RECEIVERSHIP FOLLOWS

Court Dismisses His Suit But Chicago Creditor Then Acts Against Streator Company—Result of Internal Turmoil.

Efforts of John C. Barlow practically to tie up the Streator Motor Car Co., of Streator, Ill., of which he is president, and to force a change of management have failed. The several suits which he brought against the company, and all of those who had to do with its reorganization, were dismissed on Monday last by Judge Eldredge in the Circuit Court of La Salle County (Ill.), after a trial which lasted some three weeks. The court ruled that the Barlow action lacked equity and dissolved a temporary injunction which had been issued without notice to the Streator company and its co-defendants.

The Streator company's victory, however, proved to be of small avail, as yesterday it was thrown into the hands of a receiver on the petition of the Tuthill Spring Co., of Chicago.

At the time of its embarrassment last year, the reorganization of the company was effected by the pledging by Barlow and Paul L. Chubbuck, vice-president of the company, of most of their possessions, a bondholders' committee being formed to observe the conditions. Barlow and Chubbuck then were firm friends, but for some reason or other Barlow took offense and instituted proceedings in which he charged mismanagement of the business and a conspiracy to defraud him. He named as defendants the Streator Motor Car Co., the People's Trust & Savings Co., Western Motor Co. of Indiana, A. O. Smith Co. of Milwaukee, Frank B. Wilkinson and W. J. Zimmers.

The burden of Barlow's complaint was that the management of the company was being shaped for the benefit of Chubbuck and the bondholders' committee. To carry out his program, he also sought the appointment of a temporary receiver for the company until his complaint could be heard by the court. All of the defendants apparently were sure of their ground, for they immediately waived service of process, entered their appearance and asked for an immediate hearing.

When the case came to trial Barlow took about three weeks to put in his testimony. Much to his surprise, the defendants, feeling that Barlow had not made out a case, refused to offer evidence of any sort. The case, therefore, was decided by the court on the testimony of the plaintiff alone, which, as stated was sufficient to convince the court that it was without merit.

Daimler Import Finally Goes Under.

Pressure on the Daimler Import Co., of New York, which during recent weeks had become acute, resulted in its failure on Monday last, 21st inst., when H. Content & Co. threw it into the bankruptcy court. The Content claim, which covers rental of the Daimler premises at 751 Fifth avenue, amounts to $1,826.18. Previously three other judgments had been entered against the Daimler company, two of them representing notes for $23,270, held by the New Netherlands Bank of New York, the others representing unpaid insurance premiums and money paid by J. A. G. Pennington, of Norfolk, Va., for a truck which was not delivered. It is also understood that the Import company owes the parent Daimler company some $15,000 in license fees.

The company was incorporated in 1910 with capital stock of $300,000 and, under license, held the selling rights for Mercedes cars. J. M. Carples, its secretary and manager, tendered his resignation some three weeks since, and it is generally understood that he will become interested in the Mercedes-Daimler Selling Corporation, which recently was incorporated under New York laws and which probably will fall heir to the Mercedes selling rights.

Lacair Seeks $15,000 for Broken Contract.

Alleging that he had been damaged $15,000 worth by the cancellation of his contract, Robert J. Lacair on Thursday last instituted an action in the Supreme Court in New York County and secured a writ of attachment for that amount against the Jackson Motor Co., of New York City, by whom he had been engaged as sales manager on July 1st last.

In support of his allegations, Lacair submits the letter written by L. P. Hutcheson, the vice-president, in which it is set forth that Lacair was to receive a salary of $3,600 per year and was to dispose of 25 cars by October 1st last, failing which the Jackson company reserved the right to terminate the contract. In addition to his salary, Lacair was to receive a commission of $10 on every car sold and delivered, and if he disposed of 400 cars by February 1st, 1913, his salary was to be increased to $5,000 a year, plus the $10 commission.

Lacair claims that he contracted not only for 25 cars by October 1st but for a total of 190 cars, and assumed that everything was satisfactory until October 2nd, when he received a letter informing him that his contract had been terminated. He then lost no time in consulting an attorney and filing suit.

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AJAX-GRIEB'S NEW POLICY NETS INCREASED EARNINGS

End of First Year's Appeal to Dealers Shows Profits of $408,000—More Than 3,000 New Accounts Opened.

Prosperity smiled broadly on the Ajax-Grieb Rubber Co. during the past season—how broadly is witnessed by the fact that on a net business amounting to $2,936,-923.19, during the fiscal year ending August 31st last, there were net earnings of $408,-434.53, which is practically a two-fold increase as compared with the net earnings of the previous year. The financial statement of the company for its fiscal year, which just has been made public, is as follows:

Assets.

Cash in banks and offices		$110,307.48
Bills receivable		137,389.42
Accounts receivable		291,313.65
Merchandise and materials		432,672.81
Mortgages, etc. (owned)		12,912.61
Real estate, buildings, machinery and equipments	$322,296.72	
Less depreciation charges	57,844.01	
		264,452.71
Patents		10,000.00
Total assets		$1,259,048.68

Net earnings for year, $408,434.53.
Fire insurance carried, $890,000.00.

Liabilities.

Notes payable		None
Accounts payable (not due)		$155,161.77
Capital stock:		
Preferred 7 per cent.	$285,000.00	
Common	450,000.00	
		735,000.00
Surplus August 31st, 1912		368,886.91
Total liabilities		$1,259,048.68

In his report submitting this financial statement, William G. Grieb, president of the Ajax-Grieb Rubber Co., remarks that, although the factory in Trenton has been working 24 hours a day since February, 1911, and still is working at full pressure, it has not yet been able to meet the demand for either Ajax tires or the druggist sundries which are produced, and has in hand orders sufficient to keep the plant at top speed for two months.

Accounting for the handsome increase in earnings, President Grieb points out that it was considerably influenced by the fact that "price units obtained were about 25 per cent. less than the preceding period," due to the policy of the company in reducing the volume of business done with automobile manufacturers and increasing the business with dealers and car owners which, of course, correspondingly increased the margin of profit, and at the same time reduced the possibility of loss. This policy also resulted in increasing the number of Ajax customers by more than 3,000, giving to the Ajax productions a much wider distribution.

Cannon Secures Support in Iowa.

J. F. Cannon, who, it is stated, has been connected "with nearly all of the leading automobile factories in Detroit and elsewhere," has organized the Cannon Motor Car Co., in Des Moines, Ia., and opened temporary offices in the Utica building in that city. Two factory sites are in view, but no selection will be made until the company, which will be backed partly by Des Moines capital, is incorporated. It is Cannon's purpose to produce a light roadster and a light truck, each of which will list at about $500. It is stated that success already is assured, as the entire output of the projected factory for the first year has been contracted for by a dealer in Des Moines.

Stewart Carburetter Going into Germany.

Indicating that the foreign sponsors for the Stewart carburetter, the California invention which already has obtained a foothold in Great Britain, are reaching out for business on the Continent, the Stewart Precision Carburetter Co. (Germany), Ltd., has been registered under English laws with an authorized capital of £10,000. G. B. Ellis, 70-72 Chancery lane, London, figures as the corporator.

Buys Three Years' Output of Rayfields.

The Rayfield Motor Sales Agency, of St. Louis, Mo., has contracted for the entire output of the Rayfield Motor Co. of Chrisman, Ill., for a period of three years, the production being six-cylinder cars exclusively. The Rayfield Motor Sales Agency is an outgrowth of the Brown Automobile Co., of St. Louis, and is controlled entirely by J. R. Brown and his associates.

Clevelanders Purchase Elmore Parts.

The M. & M. Co., of Cleveland, O., which is one of the prominent supply houses in that part of the country, has purchased the entire stock of parts of the Elmore two-cycle car, the manufacture of which recently was discontinued by the General Motors Co. The stock purchased includes not only parts but bodies.

Federal Rubber Doubles Its Capital.

The Federal Rubber Mfg. Co., of Milwaukee, which is one of the John N. Willys properties, has increased its capitalization from $1,000,000 to $2,000,000. The increase is represented by 7 per cent. preferred stock redeemable at 120, and is designed to take care of the expansion of the plant which already is in progress.

BRISCOE TO RELINQUISH U. S. MOTOR PRESIDENCY

"Crucified," Say Friends, Despite Announcement Couched in Graceful Terms—How Ticker Tape Cost Him Dear.

After a year of that sort of experience that turns hair gray, Benjamin Briscoe has resigned the presidency of the United States Motor Co., which now is in process of reorganization. He will remain in office, however, until about November 15th, when, with his family, he will leave for several months' stay in Europe for the recuperation which he so greatly requires.

Announcement of Briscoe's resignation was made late last week. It was couched in graceful, flowing language, which, however, did not deceive those who are familiar with existing conditions. It was well known that he would retire and that everything was working to that end. In fact, as long ago as July last, and two months before a receiver was appointed, financial prints had stated that he would relinquish his high office in the big corporation. It was an open secret that since the banking interests projected themselves actively into the affairs of the United States Motor Co., Briscoe's way had not been strewn with roses. They gradually assumed entire control and latterly even took possession of Briscoe's private office, shunting him to small quarters in an out-of-the-way corner in the building at West 61st street occupied by the company.

However Briscoe may feel, there is no doubting the sentiments of his intimates. "Ben has been crucified," is the way one of them expressed it after his resignation had been announced, the man who voiced this opinion declaring that Briscoe himself is one of God's noblemen to whom he willingly would give anything save his wife.

It is generally understood that Briscoe will be succeeded by W. E. Strong, who became chairman of the company's board of directors when its financial stringency became acute and who was appointed one of its receivers when the failure occurred on September 11th last. Strong represents the banking interests and will have general oversight and direction of the company's financial affairs, the general management of which will fall on other shoulders. It has been offered to several well known men in the trade but, so far as known, only Walter E. Flanders consented to consider it.

Briscoe's experience in the United States Motor Co. cost him a pretty penny. He first entered the automobile trade through the medium of the Briscoe Mfg. Co., of

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Detroit, which began the manufacture of automobile parts in 1899. Later, in 1904, he joined with J. D. Maxwell in organizing the Maxwell-Briscoe Motor Co., which, founded on the ruins of the Mobile Co. of America, attained remarkable success. It was on the top wave of prosperity when the Selden patent, which Maxwell-Briscoe had refused to recognize, was declared valid in 19—. a decision which later was reversed but which caused a semi-panic and a rush for cover on the part of unlicensed manufacturers. In order to obtain a Selden license, Briscoe and his associates acquired the Columbia Motor Car Co., of Hartford, which not only held a license but which was a participant in the royalties accruing from the patent.

The United States Motor Co. grew out of this combination, which, during the first year earned a profit of $2,600,000. It was through the acquirement of the Columbia company that several men of millions and ticker tape entered into the affairs of the big corporation. In due course, they attracted others of their kind and the business was enlarged by the acquirement of the Dayton Motor Car Co., of Dayton, O.—against Briscoe's judgment, it is stated—for which the sum of $4,000,000 was paid, and also by the purchase of the Alden Sampson Mfg. Co., of Pittsfield, Mass., for which a comparatively nominal sum—less than $200,000—was given.

During the last year the E. R. Thomas Motor Co., of Buffalo, N. Y., which had been purchased by one of the bankers who had become one of the largest holders of United States Motor debentures, was quietly unloaded on the United States Motor Co., although its condition at all times during recent years was questionable. Meanwhile, factory enlargements had been the rule, and although the big company was doing a good business, it lacked working funds, and with burdens which had been imposed, it gradually bent and finally reached the breaking point on September 11th last.

Some of those who are familiar with the conditions which existed do not hesitate to employ strong language in describing the means and motives which brought about this end. It is certain, at any rate, that the big corporation became enmeshed in ticker tape, with which Briscoe, at least, was not very familiar, and that things were done which men who had no interest in tickers or ticker tape would not have done if left to themselves.

The assessment of $24 per share which has been levied on the United States Motor Co.'s stock will, it is said, assist in serving the ends of men who watch the tickers. Some of them are reported to have bought large blocks of the stock since the failure at less than $1 per share, and as an underwriting syndicate stands ready to provide the necessary capital for the reorganization, their gains will be large. All of those unable to meet the assessment, of course, will be wiped out. In the case of Messrs. Maxwell and Briscoe, for instance, it is understood that their holdings are so large that to meet the assessment would require cash otulays of approximately $400,000 each, a sum sufficient to cripple the resources of even men who occupy high places but who have put most of their fortunes into brick and machinery.

Williams Heads Electric Association.

At the annual meeting of the Electric Vehicle Association of America, Arthur Williams, of the New York Edison Co., was chosen president, to succeed William H. Blood, Jr., of Boston. The other officers elected are as follows: F. W. Smith, United Light & Power Co., New York, vice-president; Harvey Robinson, New York, secretary, and Day Baker, Boston, treasurer. The following named were elected members of the executive board: William H. Blood, Jr. (Stone & Webster, Boston), P. D. Wagoner (General Vehicle Co., New York), G. N. Kelly, New York, and E. S. Mansfield (Boston Edison Co.) for three years; William G. Bee, Edison Storage Battery Co., Orange, N. J., to fill an unexpired term of one year.

Wishart-Dayton Files its Schedule.

The Wishart-Dayton Auto Truck Co., which was petitioned into bankruptcy about two months ago, this week filed its schedule in bankruptcy in the Federal court in New York City. They disclose liabilities of $33,899 and nominal assets of $13.569, consisting of one motor truck, $2,493; accounts of $1,076, and a claim for $10,000 damages against the Dayton Auto Truck Co., of Dayton, O., for which the alleged bankrupt was New York dealer. Among the creditors are the Dayton Auto Truck Co., $4,729; Knauth, Nachod & Kuhne, $17,532, secured; People's Bank and Trust Co. of New Haven, Conn., $3,530, and E. W. Clave & Son, Inc., $2,280.

Hayes Note Indorser Claims Immunity.

Just who should pay two notes of $572.41 given July 18, 1910, to George M. Port, a rubber middleman, of 155 Sixth avenue, New York City, by the Hayes Rubber Co., of New York City, which several months since became financially involved, is the problem contained in a suit now in the Supreme Court for New York county, wherein the Ross Rubber Mfg. Co., a Wisconsin incorporation, is the complainant in the case.

According to the pleadings, the notes were given to Port by the Hayes company and Port endorsed them and passed them on to the Ross concern. The notes were due April 1 and June 1, 1911, and on the latter note $500 was paid at divers times between June 28 and October 14. The complainant asks the face of the notes and interest less the $500. Port, however, claims that following the maturity of the April 1st note he asked for a statement of his account with the Ross company and paid it, the amount being $26.77, and the note not being included. He, therefore, claims immunity from prosecution.

Canada Chief Purchaser of Engines.

Of the 613 automobile engines which constituted the American exports for the month of August, more than two-thirds, or, to be exact, 493, were shipped into Canada from Detroit, the record in detail being as follows:

	Number.	Value.
Canada	493	$45,197
England	116	35,514
Cuba	3	471
Venezuela	1	230
	613	$81,412

For the eight months ending with August, the total exportation of engines reached a valuation of $724,135, which represents 6,316 separate motors. As the records were not separately kept at that time, comparison with the corresponding period of previous years is impossible.

Green Wins in Broken Contract Suit.

The claim of A. Hazen Green, an accessory dealer at 1686 Broadway, New York City, that his selling contract of some four years ago with the Niagara Lead & Battery Co., of Niagara Falls, N. Y., was broken and that he was damaged, resulted last week in a verdict in the Supreme Court for New York County of $5,118.55 for Green. His claim was for damages to the amount of $10,000.

U. S. Motor Sells Another Branch.

The United Motor San Francisco Co., which is substantially the Pacific Coast branch of the United States Motor Co., has been taken over by Fred J. Linz and L. W. Sanborn, both of whom have been identified with Maxwell cars since 1905. Their territory includes Northern California, Nevada and Hawaii.

Farr Opens His Office in Detroit.

Henry W. Farr, at one time connected with the General Motors Co., has set up as manufacturers' representative in the Wayne County Bank building, Detroit. Among his several accounts are those of the Brown Windsheld Co., Instantaneous Lighter Co and the Duplex Electric Mfg. Co.

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KNOX ELECTION DOES NOT SIGNIFY REORGANIZATION

Merely a Legal Formality and Officers Chosen Not Permanent—One Reorganization Plan Formulated But Lacks Approval.

Because the Knox Automobile Co., of Springfield, Mass., elected officers last week, there were those who assumed that it marked a step in the reorganization of the company, if, indeed, it did not mark its practical completion. As a matter of fact, however, the election of officers had no bearing on the reorganization plans which are in hand; it was merely a formality made necessary to keep the Knox organization alive, the election occurring on the date fixed for its annual meeting.

So far as the stockholders of the company are concerned, they own none of the assets, all of which, of whatever nature, were transferred to Harry G. Fisk and Edward O. Sutton, to whom the company assigned on September 28th. Messrs. Fisk and Sutton are sons-in-law of the late A. N. Mayo, who was by far the largest creditor of the Knox company; and, according to reports, the action of the Mayo administrators will have an important bearing on any reorganization plan which may be submitted. Certain stockholders are particularly active in that direction and have gone so far as to form a creditors' committee to outline a plan of organization.

The committee of three which is drafting the plan comprises Thomas Z. Lee, of Providence, R. I., chairman; John J. Shaughnessy, of the First National Bank of Marlboro. Mass., and C. C. Lewis, of Springfield, Mass. Judge Lee will not disclose the full extent of the plans which will be submitted, but states that his committee has entered into negotiations with the Old Colony Trust Co. of Boston to act as depository of all the claims of the creditors, both secured and unsecured, and also the common and preferred stock of the company. When these deposits have been made, the complete plan for the readjustment will be forwarded to all the creditors for acceptance.

Although Judge Lee has stated that entire harmony prevails on all sides, he nevertheless has let fall some caustic criticisms of the former management of the company, adding that economies effected since the assignment have served to put the property on a paying basis. Despite Judge Lee's assertion that harmony exists, it is stated that the Mayo interests may not be found agreeable to the plan of reorganization which his committee proposes to submit.

A condensed statement of the Knox company's condition, which was presented at the annual meeting on October 1th, is as follows:

Fixed Assets.	
Real estate	$307,212.62
Machinery and equipment	241,622.22
Agency equipment	2,975.44
	$551,810.28
Floating Assets.	
Inventories	$1,264,116.06
Prepaid insurance and interest	8,647.52
Notes receivable	6,892.77
Accounts receivable	300,163.02
Cash	14,272.44
	$2,145,902.09
Less reserve for doubtful accounts receivable	30,000.00
Total assets	$2,115,902.09
Fixed Liabilities.	
Mortgages payable	$36,900.00
Floating Liabilities.	
Notes payable	$978,500.00
Accounts payable	199,832.68
Advanced on orders	8,562.53
Accrued interest, payroll and taxes	28,566.19
Total liabilities	$1,252,361.40
Capital stock	$1,000,000.00
Less deficit of	136,459.31
Net capital	$863,540.69

The officers who were elected at the annual meeting, which action, as stated, is merely in the nature of observing a legal formality, are as follows: President, W. E Wright; vice-president, H. G. Fisk; treasurer, A. E. Smith; clerk, Charles H. Beckwith. The directors are H. G. Fisk, E. O. Sutton, W. H. Chase of Leominster, M. J. Greenwood of Gardner, Elijah C. Johnson of Hartford, Conn., Peter Murray, W. H. Cutler of North Wilbraham, W. E. Wright and C. H. Beckwith. The executive committee of the board of directors will be composed of Peter Murray, W. E. Wright and E. O. Sutton.

Souther Sails on Wire Wheel Mission.

Henry Souther, former president of the Society of Automobile Engineers, sailed to England, on Saturday last, in the interests of the George W. Houk Co., of Philadelphia, which recently acquired the American rights for the manufacture of the Rudge-Whitworth factory in Coventry, with a view of familiarizing himself with the processes in vogue there, having particularly in mind the quick detachable rim which has been developed for application to wire wheels.

Packard Secures Foothold in Germany.

R. Dreyman, of Dusseldorf, has secured the Packard agency for the German empire. It is his purpose to push the American car aggressively, and to that end he will establish several branches for the distribution and care of Packard cars.

PREST-O-LITE INSTITUTES FIVE SUITS ON NEW LINES

All Who Refill Its Trademarked Tanks To Be Prosecuted in Broad Campaign—New York Business Law Invoked.

Suits which in their scope may be far-reaching enough to hit every automobile dealer and garageman in New York State who fails to respect the Prest-O-Lite patents in their entirety have been instituted by the Prest-O-Lite Co., through its New York attorneys, the first actions having been filed in several districts of the New York Municipal Court. The proceedings are brought under section 367 of article 24 of the general business law of New York State, and if convictions result each defendant will be compelled to pay $100 for every time he has refilled any of the gas tanks manufactured by the Prest-O-Lite company.

The first suits are leveled at the Weaver-Ebling Auto Co., 35% Automobile Supply Co., American Auto Supply Co. and J. H. Parsons, of New York City, and Banzer & Schluchtner, Brooklyn. These are apart from actions carried on in the Federal courts for patent infringement and are brought under that section of the State law which forbids a corporation or individual to refill any receptacle which originally contained a patented article and which receptacle is trade-marked.

There also is pending in the Supreme Court for Erie County, in Buffalo, a similar action against the Searchlight Gas Tank Co., wherein the Prest-O-Lite Co. asks approximately $50,000 as penalties for the refilling of tanks. The Searchlight company was sued for infringement in the Federal court and won out before Judge Kohlsaat in Chicago, and that case is now in the Circuit Court of Appeals.

Ohio's Assets Appraised at $239,000.

Appraisers appointed by the receivers of the Ohio Motor Car Co., of Cincinnati, O., have rendered their report, placing the value of the company as a going concern and as an entirety at $239,000. The total was made up of these several items: Real estate, buildings and sprinklers, $80,000; electric light and wiring, heat and power system, $3,000; machine tools, patterns, dies, machinery (not machine tools), $22,-145; fixtures, shafting, beltings, vises, anvils, $3,343; office fixtures, safes, filing cabinets, $1,700; power plants, motors, $5,000; stock and material, finished and unfinished, $81,640; bills receivable and bank accounts, $10,631.44; cash on hand, $15,053.30.

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GENERAL MOTORS' SALES IN EXCESS OF $64,000,000

Net Profits Nearly $700,000 More Than Last Year—Annual Statement Discloses Condition of Big Corporation.

According to its financial statement for the fiscal year ending on July 31st last, which just has been issued, the 24 companies constituting the General Motors organization did a business of $64,744,496, which compares with $42,733,303 during 10 months of the previous year, the loss of two months being explained by a change in the date of the company's fiscal period.

The total profit from the operation of the subsidiary companies amounted to $5,770,-177, from which has been deducted $1,023,-421 for losses in certain of the subsidiaries, leaving a net profit to the General Motors Co., after deductions for depreciation, of $4,746,756, as against $4,066,251 for the 10-months period of 1911. The surplus has been increased from $1,240,175 to $1,262,-594, and the reserves from $3,202,076 to $4,299,471. The profit and loss account for the 12 months is as follows:

PROFIT AND LOSS ACCOUNT

Profit and Loss surplus July 31, 1911	$1,240,175.26
Add undivided profits for 12 months ending July 31, 1912, per income account above	2,856,082.76
	$4,096,258.02
Reduction of inventory and assets as carried on books October1, 1910, and liquidation losses	2,833,663.14
Profit and Loss surplus July 31, 1912	$1,262,594.88

The total assets of the company are $54,-388,072. The liabilities are $53,695,563.72; they include Weston-Mott notes amounting to $600,000, of which $300,000 was paid on September 15th last. The remaining $300,-000 does not mature until one year later. The General Motors Co. previously owned all save 50.2 per cent. of the Weston-Mott capital stock, entire control, it transpires, being secured on payment of $1,040,000, equally divided in preferred and common stock. The increase in the company's good will is explained by the Weston-Mott purchase.

The current assets have been reduced from $26,186,816 to $25,311,135, but by the same token the liabilities have even more greatly diminished, from $23,401,201 to $20,-928,259, the net working capital being $20,-666,865 as against $23,065,353. During the year there was charged to capital account the sum of $1,648,206, representing additions to real estate, plants and equipment, amounting to $2,124,184, from which were deducted sundry adjustments, which are charged off to profit and loss, amounting to $475,978. About half of this expenditure represents additions to the Cadillac plant and equipment, which will permit increasing the output from 12,000 to 15,000 a year.

During the fiscal year the exports amounted to approximately $1,700,000 exclusive of the Canadian trade, the figure being about double that for 1911.

In rendering his report, Thomas Neal, president of the General Motors Co., states that manufacturing operations are more advanced than during either of the two preceding years, and that the cash receipts for the first two months of the new fiscal year were more than $1,000,000 ahead of the corresponding period of last year.

The statement in detail and how it compares with the preceding year is shown in the following table:

Cleveland-Galion to Increase Capital.

Stockholders in the Cleveland-Galion Motor Truck Co. have been called to meet in the offices of the company in Cleveland, O., November 4, to vote upon a proposition to increase the company's capital stock from $300,000 to $1,000,000. The new stock is to be $500,000 7 per cent. cumulative preferred and $200,000 common.

Star Carburetter Enlarges its Scope.

Its productions having become considerably diversified, the Star Carburetter Co., of Detroit, Mich., has changed its name to the Star Foundry & Machine Co. It will continue to operate, however, at 685 East Atwater street.

CONDENSED CONSOLIDATED BALANCE SHEET

Assets

	1912	1911
Fixed Assets: real estate, plants, and equipment	$19,280,888.99	$17,632,682
Patents, agreements, etc.	1,871,436.20	2,049,831
Miscellaneous investments	560,499.50	854,803
Current and working assets:		
Cash in banks and on hand	3,080,920.98	4,054,844
Notes ($262,273.33) and accounts receivable	4,229,112.51	4,637,076
Inventories	17,578,366.15	17,303,715
Prepaid expenses	422,736.13	191,179
Good will, representing excess of appraised value over book value of capital stocks of subsidiary companies owned, less reserve	7,934,198.14	7,663,938
Total	$54,958,158.60	$54,388,072

Liabilities

Capital Stock:				
Preferred stock (authorized $20,000,000 issued		$18,038,400.00		$14,393,500
Less: In treasury of General Motors Co.	$1,322,000.00			
In treasury of subsidiary companies	1,779,600.00	3,101,600.00		
			$14,936,800.00	
stock (authorized $40,000,000) issued		$19,874,030.00		15,822,330
Less: In treasury of General Motors Co.	$3,173,146.95			
In treasury of subsidiary companies	329,700.00	3,502,846.95		
			16,371,183.05	
Total in hands of public			$31307,983.05	
Funded Debt:				
6% First Lien Five-year Sinking Fund Gold Notes			12,452,000.00	14,002,000
Outstanding Capital Stock (par value) and surplus of subsidiary companies, being the portion not owned by General Motors Co.:				
Capital Stock			578,000.00	1,436,000
Surplus			413,838.50	1,169,527
Current Liabilities:				
Accounts Payable			2,853,021.77	2,143,847
Notes Payable (Weston-Mott Co.)			600,000.00	
Interest, Taxes and Pay Rolls Accrued, not due			929,854.84	641,767
Reserve for three months' proportion of Preferred Stock Dividend No. 8, payable November 1, 1912			261,394.00	335,848
Reserves for special purposes			4,299,471.56	3,202,076
Surplus			1,262,594.88	1,240,175
Total			$54,958,158.60	$54,388,072

INCOME ACCOUNT

		1912	1911
Net Profits for year after deducting expenses of manufacture (including maintenance and depreciation), selling and administration as well as taxes, insurance and interest on temporary loans	$4,838,448.55		$4,447,146
General Motors Company proportion thereof		$4,746,756.50	4,066,251
Accrued interest 12 months on General Motors Company 6% First Lien Notes		850,463.23	750,000
Balance		$3,896,293.27	$3,316,251
Preferred dividends for 12 months at rate of 7%		1,040,210.51	842,074
Undivided profits for 12 months		$2,856,082.76	$2,474,176

WORKING CAPITAL

		1912		1911
Current Assets:				
Cash		$3,080,920.98		$4,054,844.21
Notes ($262,273.33) and accounts receivable		4,229,112.51		4,637,876.73
Inventories		17,578,366.15		17,303,715.86
Prepaid expenses		422,736.13		191,179.74
Total Current Assets		$25,311,135.77		$26,186,816.54
Less Current and Accrued Liabilities:				
Current accounts payable	$2,853,021.77		$2,143,847.03	
Notes payable (Weston-Mott Company)	600,000.00		.....	
Interest, taxes, and pay-rolls accrued, not due	929,854.84		641,767.98	
		4,382,876.61		2,785,615.01
		$20,928,259.16		$23,401,201.53
From which deduct amount reserved for three months' proportion of Preferred Dividend No. 8 payable Nov. 1, 1912		261,394.00		335,848.33
Net Working Capital		$20,666,865.16		$23,065,353.20

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The Week's Incorporations

Des Moines, Ia.—Guarantee Motors Co., under Iowa laws, with $3,000 capital; to deal in motor cars. Corporators—John A. Garver, C. T. Gadd, and others.

Jersey City, N. J.—Delton Tire Co., under New Jersey laws, with $500,000 capital; to manufacture tires. Corporators—H. O. Coughlan, T. K. Mallaby, H. T. Letts.

Kansas City, Mo.—Shackelford Garage Co., under Missouri laws, with $2,000 capital; to operate a garage. Corporators—Addison Shackelford, L. E. Shock, Paul Gee.

Clarkedale, Tenn.—Essenkay Sales Co., under Tennessee laws, with $4,000 capital; to deal in tire filler. Corporators—J. L. Hartshorn, J. W. Primrose, L. L. Lebdetter.

Oak Park, Ill.—Radway Garage Co., under Illinois laws, with $6,000 capital; to operate a garage. Corporators—James F. Bambas, Henry P. Sinden, Charles J. Radway.

Rock Hill, S. C.—McFadden Automobile Co., under South Carolina laws, with $3,500 capital; to deal in motor cars. Corporators—J. Leonard Yates, B. S. Dearing, N. B. Yost.

Wabash, Ind.—Sterling Absorber Co., under Indiana laws, with $3,000 capital; to manufacture motor car parts. Corporators—Marshall Tillman, Charles Huff, Joseph Kaiser.

Louisville, Ky.—Macpherson Automobile Co., under Kentucky laws, with $1,000 capital; to deal in motor cars. Corporators—F. Macpherson, O. Macpherson, C. Macpherson.

Louisville, Ky.—Dixie Rubber Co., under Kentucky laws, with $5,000 capital; to deal in tires, etc. Corporators—Albert H. Drake, Jack F. Marx, Ray C. Ellis, Arthur M. Breckler.

Newark, N. J.—Liberty Oil & Supply Co., under New Jersey laws, with $25,000 capital; to deal in lubricants. Corporators—Fred L. Foster, Rose C. Higgins, Irving Kunsman.

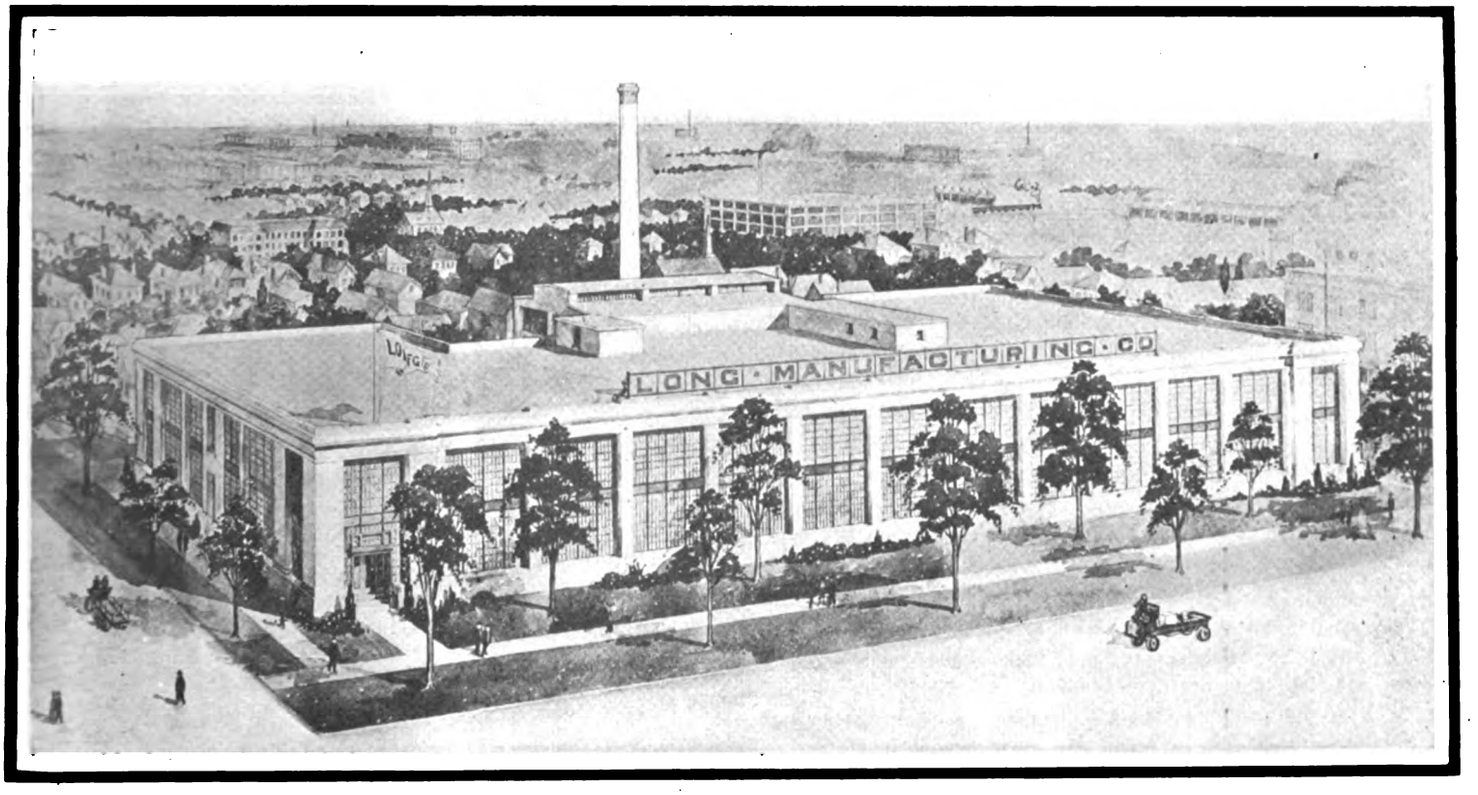
Belleville, Mo.—St. Louis Motor Transportation Co., under Missouri laws, with $25,000 capital; to operate a motor delivery. Corporators—William Bush, Frank Bush, and others.

Detroit, Mich.—Merralls Starter Co., under Michigan laws, with $15,000 capital; to manufacture engnie starters. Corporators—Wm. A. Merralls, Robert S. Neely, Harlow B. Cowland.

Nashville, Tenn.—Jackson Motor Car Co., under Tennessee laws, with $5,000 capital; to deal in motor cars. Corporators—H. C. Gillespie, D. D. Canfield, W. H. Weakley, W. D. Sandefeur.

St. Louis, Mo.—Auto Products Co. of America, under Missouri laws, with $25,000 capital; to deal in motor car parts. Corporators—Warren W. Smoot, Eugene B. Stinde, A. E. Smoot.

NEWLY COMPLETED PLANT OF LONG MFG. CO., IN DETROIT, MICH.



The new building, which is 270 x 120 feet, is constructed of reinforced concrete with cement floors and every facility to obviate the danger of fire. It fronts on East Grand Boulevard, between Cameron and Richmond streets, and will permit the production of automobile and tractor radiators to be trebled.

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Newark, N. J.—Tri-Unit Electrical Co., under New Jersey laws, with $100,000 capital; to manufacture electrical devices. Corporators—J. B. Stobaeus, Jr., B. W. Matthews, W. C. Stobaeus.

Dayton, Ohio.—McVey Manufacturing Co., under Ohio laws, with $60,000 capital; to manufacture car appliances. Corporators—James L. McVey, Walter C. Fraine, Amos H. Burkhart, Millie Galloway, Richard J. McCarty.

Detroit, Mich.—Universal Auto Supply and Repair Co., under Michigan laws, with $2,000 capital; to deal in motor car supplies and operate a repair shop. Corporators—Adolph Sloman, Robert St. John, Edmund L. Sloman.

New York, N. Y.—Wright's Garage, Inc., under New York laws, with $2,000 capital; to operate a garage. Corporators—William R. Dickie, 368 60th street, Brooklyn; Earl D. Wright, Elizabeth D. Wright, 511 West 160th street.

New York, N. Y.—Central Park Garage Co., Inc., under New York laws, with $500 capital; to operate a garage. Corporators—William E. Young, 59 West 65th street; George J. Johnstone, Charles A. Frueauff. 60 Wall street.

New York, N. Y.—Grant Six Co., under New York laws, with $15,000 capital; to deal in motor cars. Corporators—Clarence P. Hulst, 120 East 31st street; William G. Miller, Bridgeport, Conn.; James B. Speyer, 57 East 92d street.

New York, N. Y.—Kammer Automobile Co., Inc., under New York laws, with $10,000 capital; to deal in motor cars. Corporators—Max A. Kammer, Frances Kammer, 108 East 137th street; William Magsamen, 124 East 127th street.

Springfield, Ohio.—Kelly-Springfield Motor Truck Co., under Ohio laws, with $2,500,000 capital; to manufacture and deal in motor vehicles. Corporators—James W. Carroll, G. W. Patterson, Herbert B. Bradshaw, Walter E. L. Hook, L. W. Frost.

New York, N. Y.—Faissole Auto Co., under New York laws, with $25,000 capital; to deal in motor cars. Corporators—Alexander Karlin, 508 West 112th street; Lewis Lapides, 437 Decatur street, Brooklyn; Charles A. Faissole, 411 West 44th street.

New York, N. Y.—Automobile Information Publishing Co., under New York laws, with $10,000 capital; to publish automobile trade lists. Corporators—Albert F. Britton, Robert B. Johnston, 1974 Broadway; Freeman C. Britton, 7 West 103rd street.

Buffalo, N. Y.—Up-To-Date Auto Body and Specialty Co., under New York laws, with $2,500 capital; to manufacture motor car bodies. Corporators—Ludwig Dreyer, Emma H. Dreyer, both of 17 Huntington Place; George P. Askin, 256 West Tupper street.

New York, N. Y.—Auto Bankers, Inc., under New York laws, with $5,000 capital; to deal in motor cars. Corporators—Clyde E. Black, 601 West 162nd street; J. Lester Fierman, 1948 Prospect avenue; Samuel W. Schwartz, 882 Eastern Parkway, Brooklyn.

Changes Among Prominent Tradesmen.

John A. Bell has been appointed manager of the White Co.'s branch in Chicago. He succeeds James E. Plew, resigned.

J. M. Evans has resigned his post as advertising manager of the Lozier Motor Co., of Detroit. He has become identified with an advertising agency which will handle the Lozier account.

N. S. Gotshall has been appointed manager of the recently organized St. Louis Lozier Co., in the Missouri city of that name Previously Gotschall was a member of the Lozier factory traveling staff.

Walter H. Van Deusen, assistant sales manager of the Abbott Motor Co., has resigned that position. It is stated that he is likely to become head of a new company which is now in process of organization.

David M. Averill has been appointed manager of the Chevrolet Motor Co. of Detroit. Previously he was superintendent of the Durant Dort Carriage Co., of Flint, Mich., the officers of both companies being closely related. F. Goodwin succeeds to the vacancy in the Durant Dort organization.

H. E. Doty, who for the past six years has been identified with the White Co., has been appointed manager of the Haynes Automobile Co.'s Chicago branch. The territory controlled by the branch has been enlarged until it now includes Illinois, Iowa, and parts of Wisconsin, Indiana and Michigan.

A. W. Jones has been promoted to the management of the Ford Motor Co.'s branch in Houston, Tex. Previously he was connected with the Ford branch in Seattle. He succeeds M. Skinner, who has been transferred to Portland, Ore., where he will have charge of the Ford assembling plant which is now in course of erection.

Stanley Whitworth, factory superintendent of the American Motors Co., of Indianapolis, has resigned that post to join the McCue Co., of Buffalo, N. Y. Before he departed to assume his new duties he was presented with a diamond ring by the workmen and his other associates in the American company. His successor, B. J. Cline, made the presentation speech.

George S. Salzman has resigned as factory manager of the Amplex Motor Car Co., of Mishawaska, Ind. He has let it be known that he probably will become the head of a new company which is being organized to produce a popular priced car. That all is not happy in the Amplex company, despite its recent reorganization, is indicated by the report that W. J. Mead is contemplating relinquishing the presidency.

A. J. Sarjeant has been appointed manager of the branch which the Ford Motor Co. is making ready to establish in St. Paul, Minn. Sarjeant formerly was manager of the Northwestern Automobile Co. in that city, which handled the Ford car, and, therefore, will be familiar with his new duties. Pending the erection of the assembling plant which the Ford company will erect in Minneapolis, a temporary branch has been established in the Great Northern Implement building in that city, of which C. C. Hildebrand, who was successively sales manager of the Stevens-Duryea and Chalmers companies, will be in charge.

Recent Losses by Fire.

Bluestone, Minn.—Goembel Garage, damaged. Loss, $4,000.

Kent, O.—Miller & Schlarb, garage destroyed. Loss, unknown.

Forest Hills, N. Y.—Louis Nagle, garage damaged. Loss, $2,100.

Kent, O.—Miller and Lonnie Schlarb, garage damaged. Loss, $20,000.

Greenwood, S. C.—J. I. Chipley and T. B. Meacham, garage destroyed. Loss, $3,500.

New York, N. Y.—New York Mail Co., 525-31 West 15th street, garage and 20 cars damaged. Loss, $5,000.

Pittsburgh, Pa.—219-221-223 Beatty street, garage and six cars destroyed. Loss, $20,000, as follows: Abbott-Detroit agency, six cars, $11,000; Essenkay Co., $2,000; Beatty Auto Repair Co., $500; building, $6,500.

Business Troubles.

The Overland Auto Garage, of Cuero, Tex., is in the hands of a receiver; W. R. Garrett is liquidating its affairs.

Frederic Tudor of Boston, president of the National Automobile Association, has filed a petition in bankruptcy; his liabilities are $110,071; assets are nothing.

Application has been made for a receiver for the Southwestern Motor Car Distributing Corporation of Memphis, Tenn. P. A. Dougles is the petitioner.

Edwin D. Bechtel has been appointed receiver for Claud A. Perkinson, who was engaged in the automobile tire buisness at 2330 Broadway. The court authorized the receiver to continue the business for a period of 15 days.

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THE MOTOR WORLD

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager.

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor

S. P. McMINN HOWARD GREEN
R. W. SHERMAN E. F. HALLOCK

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Advertising Manager
HOWARD L. SPOHN

WESTERN ADVERTISING MANAGER
W. H. TRIPP, 1001 Ford Building, Detroit
GUS. H. JOHNSON C. H. HANDERSON
DETROIT, 1001 Ford Building CHICAGO, 1441 Monadnock Block
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ACCESSORIES AS HARDWARE "HERITAGES."

One of the hardware journals which is banging cymbals and beating tomtoms in an effort to induce hardware men to lay hands on the automobile accessory business declares that such accessories are the "heritage of the hardware man," further asserting that he is "best equipped to handle the business."

So far as made clear, automobile accessories constitute the hardware man's "heritage" because they will "replace the carriage hardware killed by motor vehicles." To bolster up its campaign, the journel in question quotes a hardware man who maintains that garages do not carry a complete line of accessories, that they lack capital and that garage men, anyway, are mere mechanics, or unknown business men, "not accustomed to figuring profits on a business basis." As a result, he adds, the garageman "buys without judgment and sells at exorbitant prices, thereby driving business out of town." On the other hand, the hardware man, according to his spokesman, merely lacks a halo to make him appear a commercial saint.

It is plain to all who have eyes, however, that hardware men already have laid strong hands on automobile accessories and, in many places, are making the most of them; and there is every evidence that their belief that they constitute their "heritage" is growing. Such belief may appear more or less amusing, but whatever may induce hardware dealers to recognize the opportunities afforded by automobile accessories is wholly to their credit and is likely to prove to their profit.

All progress they may have made, or any progress they may make, is at the expense of the automobile dealer and the garage man, for it requires no argument to demonstrate that the sale of automobile accessories is a natural adjunct to the sale of automobiles. The automobile dealer or garage man who does not recognize the fact, and turn it to advantage, will have only himself to blame if ultimately it proves that a most desirable business has passed into the control of the hardware merchants. It is to be hoped they will awaken to the situation before it is too late.

REPAIRING PARTS VS. REPLACING THEM.

The effect of American motor car manufacturing methods, which permit the production of parts in quantities with the utmost accuracy and excellence of finish and at exceedingly low cost, is most conspicuous in the rapidity and cheapness with which really good cars are built. The accuracy of the parts and their low cost, however, have had a marked effect on the repair end of the business, though the results are not so prominently displayed.

Time was when every effort was made to save a broken or damaged part, and no small amount of time and money went into the execution of elaborate and clever repair work. It is being found increasingly expedient, however, to throw out such parts and replace them with new ones, not only because it is quicker, but because the car is as good as new at the repaired part; because there is no doubt as to the integrity of the component, as there frequently must be when a repair is made; because the work can be done with cheaper labor and less expense for machinery, tools and material—because, in short, it is more satisfactory to both owner and repairer.

The custom of keeping spare parts in stock and using them to make replacements where such a proceeding is clearly of advantage to both parties concerned is spreading among repairmen; but there still are many who adhere, with what may be called stubbornness, to ancient ways of doing things. It is time that the practice of making repairs where renewals would be better was abandoned, and there are very many cases in which it can be abandoned with profit not only to the repairman but to the owner—especially if the charges made for new parts are as reasonable as owners are discovering they should be.

POSSIBILITIES FOR GASOLENE METERS.

With the price of gasolene high and a natural tendency toward more careful surveillance of the amount of fuel consumed per mile, or rather, to put it in more common terms, the number of miles per gallon obtained, it would seem that there is plenty of room for a simple gasolene meter operating somewhat on the principle of the water or gas meter. If such a device could be made cheaply, and there is reason to believe that it could, a glance at its dial would serve to show the driver exactly how much fuel had been used up between indicated points en route. Not the least of the advantages of such a device would be that it would form a record of the amount of fuel used in a month or a season without the necessity for computations.

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"OPEN DOOR" POLICY THAT PREVAILS IN MANY GARAGES

Astonishing Freedom That Chills Patrons and Invites the Light-Fingered Gentry—Remedy Available.

In one respect, garage men, particularly owners of large establishments, are unusually fortunate in that they are not made the subjects of innumerable claims for petty thefts. For it is a peculiar condition of the garage business that utter strangers are permitted to enter and roam about the premises almost at will. It is rare, indeed, that anyone halts them or makes inquiries as to the purpose of their calls.

So general is this laxness in the larger garages that anyone possessed of light fingers, and the inclination, may easily detach lamps, spare tires or anything which may be unsecured, and the wonder is that there have not been more of such thefts. Indeed, it seems almost possible that any crook possessed of sufficient nerve easily might make away with a car.

How long such conditions will be suffered is, of course, problematical, but it does seem that, as a matter of self-interest, garage men should do something to remedy the situation. As it is no unusual complaint on the part of patrons of garages that answers to telephone calls frequently are delayed to the point of exasperation, it would seem that the garage men easily might employ a boy or a girl whose business it would be not merely to attend to the telephone but to receive strangers when they visit such places in person. The loss of a single prospective patron who may be unfavorably impressed by the ease with which he is permitted to roam at will and without question or attention would be more than sufficient to offset the minimum salary that the employment of such a boy or girl would entail.

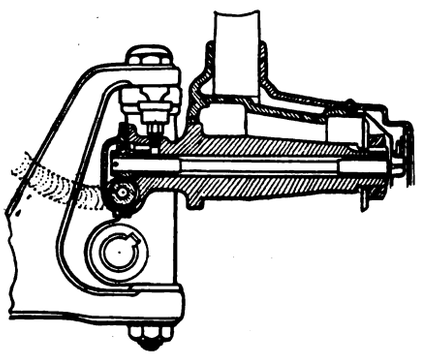
Klaxon Cash for Bulb Horn Letters.

Convinced that the bulb horn is an "institution," used as a matter of custom and not by reason of merit, the Lovell-McConnell Mfg. Co., of Newark, N. J., manufacturer of Klaxon horns, is offering $250 in 12 prizes for the 12 letters received up to December 15th in which are given the best reasons why that type of signal should be replaced by a more modern device. For the best letter the award will be $100; $50 is offered for the next best, and $10 each for the 10 next best. Conditions of the contest are few and entail principally that letters shall be not more than 350 words in length; that they shall be written on only one side of the paper; and that they be addressed to the Lovell-McConnell Mfg. Co., Desk No. 28, Newark, N. J.

Little Known Features of Well Known Cars

Although not all cars are sold fully equipped, it is rare indeed that the equipment, however scarce, does not embrace a speedometer. Yet, general as is the practice of supplying the instrument, in nine cases out of ten absolutely no provision is made by the designer of the car for speedometer attachment, and the adjustable swivel drives designed for attachment to cars of all makes and supplied by the speedometer maker, are universally used.

With the Lozier car, however, cognizance is taken of the fact that since the speedometer is regularly supplied with each machine sold it has become really a part of



LOZIER STEERING PIVOT

the car and not an item of equipment, with the result that in place of the more or less vulnerable adjustable drive which usually is employed, a drive which is made integral with the stub end of the steering axle is supplied.

As shown in the accompanying sketch, the drive consists of a shaft protruding through the axle stub and caused to rotate with the wheel hub by virtue of a spring contact. The interior end of the shaft carries a small helical pinion which engages with a second pinion carried on a short shaft to which is attached the orthodox flexible shaft which reaches to the indicator positioned on the dash. Both of the gear wheels are completely enclosed to prevent the ingress of dust and the egress of the lubricant which is supplied from a compression grease cup mounted on the upper portion of the housing. The arrangement has much in its favor in the way of suppressing noise and lengthening the life of the driving apparatus, and protecting it from knocks which cause disarrangement.



October 24-27, San Antonio, Tex.—Track races under the auspices of the San Antonio Automobile Club.

October 26, York, Pa.—Track races promoted by the York Motor Club.

October 26, White Plains, N. Y.—Track races under the auspices of the White Plains Agriculture and Fair Association..

October 26-28, Los Angeles, Cal.—Los Angeles to Phoenix road race, under the auspices of the Maricopa Automobile Club.

October 26-28, San Diego, Cal.—San Diego-Phoenix road race, under the auspices of the San Diego Automobile Dealers' Association.

October 31, Phoenix, Ariz.—Track races under the auspices of the Maricopa Automobile Club.

November 8-16, London, England—Society of Motor Manufacturers and Traders' annual show in Olympia Hall.

December 7-22, Paris, France—Paris Salon.

January 6-11, Cleveland, Ohio—Cleveland Automobile Show Co.'s exhibit in the Central Armory.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, Philadelphia, Pa.—Philadelphia Automobile Trade Association's exhibit in the First and Third Regiment Armories.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

January 27-February 1, Detroit, Mich.—Detroit Automobile Dealers' Association's show in Wayne Gardens.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

February 10-15, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Commercial vehicles only.

February 10-15, Minneapolis, Minn.—Minneapolis Automobile Show Co.'s show in the National Guard Armory.

February 17-22, Kansas City, Mo.—Kansas City Automobile Dealers' Association's show in the Convention Hall.

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SOLUTIONS OF THE USED CAR PROBLEM

In Competition for Motor World's Cash Premiums of $50, $25, $15 and $10 for the Four Best Articles Dealing With the Subject.

By JOHN A. THOMPSON, East Lynn, Mass.

In order to put the used car business on a sound basis, it is necessary to evolve a fair and honest method of handling it, and as a first consideration, I suggest that dealers refuse to take in trade any used cars, and instead that they sell them for their owners on a five per cent. commission basis, only good cars of not more than three years' life to be considered. There are many used cars sold that are veritable old junks that are not safe to be on the highways, and these really ought to be condemned by the registration boards of the various States.

Secondly, I suggest that the prices of used cars be fixed according to a standard of depreciation, so that no car more than one year of age shall be sold for more than half its list price, and that its selling price be reduced by 25 per cent. for every year up to three years and after the first year that it is in use. This scale of prices, I think, is about what should prevail, and would result in many quick sales. The cars would be turned into cash, the purchaser would be satisfied and the dealer would keep his floor clean.

If each dealer would agree to handle cars of no other make than that for which he is the agent or representative, it probably would help solve the problem. Each dealer then would have only his own particular brand of cars to deal with and his establishment would not be cluttered up with a miscellaneous assortment. It seems to me that any dealer would rather stick to the line he knows best than to sell all kinds of used cars. Of course it is a rather complex question as to what we are to do with these used cars, but we have them in our territory and so we must make the best of them.

After all is said and done, there is a market for all good used cars, but the price is too high in most cases and people will not give two-thirds to three-quarters list price for automobiles that have seen service.

In order to make plain my schedule of prices let me cite a common instance: An owner desires to dispose of a used car; he "has had it only 18 months; driven it 3,000 miles; given it the best of care." Nine times out of ten he has really driven it about 13,000 miles and scarcely has given more than a tinker's dam how he used it or abused it. I think that any owner gets the best half out of his car the first year he uses it and it is on that basis that I have reached my scale of figures.

In my opinion it is much better to have some one do all the second hand business than it is to have floor space occupied by a number of different makes of cars, some of which are obsolete. Many times their presence is the cause of losing sales of new cars.

The curtailment of manufacture is impossible, of course, by reason of the close competition and the necessity for turning out a great number of cars in order to reduce "overhead" to the point where success may be obtained. But if it could be arranged so that the manufacturers themselves would buy in all used cars and rebuild them so that they might be sold at about two-thirds their list price, this might prove the solution of the used car problem. As it is, it is a feature which we must try to regulate, though I do not think we can eliminate it.

By IRA G. SMITH, Chicago, Ill.

In seeking solutions of the used car problem, it seems to me that it will be of value at least to attempt answering that time-worn question, What becomes of all the old cars? If the question is squarely faced, and an answer obtained, it will point out the ultimate destination of the used cars, which light in itself considerably will illuminate the situation.

As I see it, the destination of the increasing number of used cars is the farmyard. I believe that they will become so cheap that almost any farmer will be able to buy one, and that they will be put to uses of which the average automobile manufacturer does not dream. Some of them will be purchased for pleasure use, more of them will be bought for business purposes, others will be converted into light trucks with which butter, eggs, etc., may be brought to town, while as many more of them will be sold to industrious young men on the farms, who will remove the motors from the cars and use them for running machinery on the form; and when I say machinery I mean separators, washing machines, water pumps, feed grinders, etc.

Converting old cars into light delivery trucks is being done to a considerable extent at the present moment in Chicago, also in many small towns. When the old cars have served these purposes, they will be about ready for the junkman.

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TWO PROBLEMS SOLVED BY FREE SERVICE.

Overworking the word "service" has brought a lot of unnecessary trouble on the shoulders of the automobile dealer. It goes without saying that the purchaser of a motor car has a right to expect a certain amount of attention. But what this amount should be in dollars and cents requires careful figuring and the customer should not be allowed to exceed the limit.

One New York dealer who is making money follows the plan of charging off $50 for service for every car he sells. This is credited to the account of the purchaser of the car without the purchaser knowing anything about it. The value of the car sold is close to $2,000. Within a week after the car has been delivered a note is written to the customer requesting him to bring in the car so that it can be looked over, and the garage foreman is given a card for this customer.

Details Thoroughly Gone Over.

When the car is brought in it may be a matter of, say, six hours' time to inspect it carefully, adjust loose bolts, see that carburetter and ignition systems are working perfectly and that every bearing and moving part is properly lubricated. A note is made of any point that has been neglected by the purchaser and it is reported to him. He is requested to bring in the car again at the end of the second week, and the same process is followed. Each time a careful, accurate record of the labor is kept and a charge made against the fifty dollar credit for service originally made. Incidentally, a bill is sent to the customer each time with the record of labor, hours, etc., and the whole bill stamped "No charge," though it is actually charged against the service account of his car.

These requests to bring in the car and have it looked over are followed up at periods of one month and six weeks, the period of time extending as the customer gets more accustomed to the car. Always, however, it is the dealer who is continually on the track of the customer to see that he is getting satisfactory use from the machine.

Set a Limit and Abide by It.

The dealers who were clever enough to work out this knotty detail solved two problems at one time. They solved the problem of knowing exactly what service was going to cost them on any new car they sold and they solved the problem of impressing on their customers in a tactful way the fact that they were actually giving them a very real sort of service. The result of this plan has been a marked increase in sales to old customers and a reputation for service second to none in New York. The customer is taken care of up to the full amount within a year. But beyond that amount the dealer does not go, and when he shows the customer in detail what he has done for him it requires no further argument that they have been mighty liberal with free service.

Incidentally, these dealers do not cut prices nor take trade-ins at inflated values. And the best of it is that purchasers do not expect it, because each customer is a booster. Other dealers to whom the idea appeals will do well to note that this free service is given as carefully and accurately as if it were charged for—and as far as the men in the garage know, it is charged for. Give a service free and let the repairmen know it is free, and it has a tendency to make them careless. And there is no customer who would not rather pay for good service than have indifferent service thrust upon him gratuitously.

TO ENSURE PROPER WINDOW DISPLAYS.

Inquiry among many dealers in many different places discloses the fact that one reason for so many poor window displays on the part of automobile dealers is that the "boss" desires to attend to it himself but usually is too busy. The result is that nobody attends to it.

The only way to ensure proper attention and display is to place the responsibility for it definitely upon the shoulders of some one individual and let him make a study of it. This will develop originality and individuality, and the man who has the respensible will take pride in securing attractive effects. Should it be the proprietor? If he has no competent interested salesman, yes. If he has good, live, wideawake, business-getting salesmen, let him turn it over to one of them. Naturally such a salesman will watch the displays of competitors and beat them if he can. Such a man soon will love the work for its opportunities, and looking after the displays will develop a keenness and power of observation that will help him personally as well as the concern for whom he works.

SELLING A CAR VS. DISPOSING OF IT.

"No man who cuts prices can hope or expect to build up a real business organization," declared E. W. Steinhart, president of the Cadillac Motor Co., of Indiana. "One trouble is that only the proprietor (and sometimes not even he) can tell when the bottom has been reached, and thus all stimulus to individual effort and intensive salesmanship is lost.

"You haven't sold a car when you have cut a price—you have simply 'disposed' of it," adds Mr. Seinhart. "When you 'sell' a car you have worked up the prospect by giving straight from the shoulder facts about the construction and merits of the car you are offering so that he is convinced that it is the best that can be had for the money. You must feel this yourself, or you cannot make the prospect feel it. When

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you have made him feel it he will realize that price is an incident and quality the important thing."

Know All Points About the Car.

This kind of salesmanship means that you must study your car and know its every point from tail lamp to tip of front spring, from tires to top, inside and out. The salesman who follows this plan will never be in the position of the salesman who told the boss that "he could have made the sale if the car had only been equipped with spiral timing gears like the Star car. "Why, you darn fool," retorted the boss, "we had spiral gears sixteen months before the Star had them!" Unfortunately, the salesman did not know it and he didn't make the sale.

Appearances May Be Deceptive.

As an example of the other sort, there can be recalled a salesman who spent about a month in a factory learning about the car and then spent two weeks on the floor, catalog in hand, checking up the various features. This salesman stood there, book in hand, seemingly in meditation. He was a little fellow. But his eyes were bright and he had wonderful power of concentration. In six weeks he knew more about the line of cars he was selling than some men knew after six years. He got right down to the bottom of things, and, plain, ordinary, common looking chap that he appeared to the office men, he developed the biggest business that the factory ever enjoyed from the territory he covered. Incidentally, the prices were always maintained and the customers held fast. He "sold" the cars to them and they stayed "sold."

LACK OF THOROUGHNESS IN REPAIR SHOPS.

When it is remembered that the price of an automobile runs up into hundreds or thousands of dollars, it is not unreasonable to believe that the dealer or repairman should exert as much care to prevent soiling the car as a barber exerts when performing a 15-cent shave or a 25-cent hair cut. The barber protects the clothes of his customer; the repairman seldom, if ever, thinks of protecting the car.

As an instance, a new automobile was brought back to the dealer who sold it to have some work done exactly one week after the car had been sold. It was a matter that came strictly under the head of service. The motor starter did not work and some wiring of a minor sort was disconnected.

Dirty Workmen Are Bad Workmen.

The car was left with the dealer for two days. When the owner delivered it the top was up. When it was returned to him the top was down and the clean gray lining of the top that was perfectly new when the car went in for repairs, was smeared with grease from the mechanics' dirty hands and the linoleum-covered running board showed similar evidence of the careless workmanship. There was grease on the leather cushions and grease on the floor boards, where dirty tools had lain.

When he found what had been done, the motorist who had invested considerably over fifteen hundred dollars in the car expressed himself so forcibly that the argument that ensued caused him to take his patronage elsewhere and to speak no kind words of the dealer whenever his name chanced to be mentioned.

One shop which learned its lesson early covers all cushions with a cloth and running boards with canvas, and after the job is completed the shop foreman inspects the car and makes sure there is not a mark or spot that should not be there.

ITEMS THAT ENTER INTO PROFITS

Generally speaking, but five elements enter into the cost of every article sold, and ...ese items fit the automobile dealer's ...tion as clearly and comprehensively ...ey do the situation of the manufac-...

Five Items Constitute Cost.

...e five items to be considered in fixing ...es are: (1) Material, (2) Labor, (3) ...erhead, (4) Selling Cost, (5) Profit.

In the dealer's case, except on a repair ...ob, the charge would represent the cost ...of the finished product, plus the freight. Before the dealer can know whether or not ...is selling price is yielding a profit he must ...dd to the "material" cost the price of ...Labor"—that is, the cost of fixing up a car ...fter it is unloaded, or everything he has ...spend between the freight car and the ...w room, and to this every responsible ...er will add the cost of protecting his ...rantee, or a "service" ...rge. Then ...s "overhead," which includes store ...t, or interest on investm...t in building, ...ipment, etc., light, heat, ... phone, of... expense, salaries, etc., ... all other ...ed charges.

To these items he must ...ld "selling ...st," which, generally speak..., includes ...dvertising in all its phases, co...missions to ...lesmen, travelling expenses, etc.—everything that can legitimately be charged to ...selling.

Calculate Profits in Time.

Then comes the item of profit; and unless ...he selling price will stand its share of all ...the rest and permit the addition of a profit, the dealer cannot expect to realize much of a profit.

Some dealers do not reckon selling cost except in a very general way. But they must know exactly what it amounts to before they can build on a "sure foundation," and if they cannot find out what it is, they will be wise to quit the business before the sheriff forecloses on them and forces them to do so.

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OLD LINE MANUFACTURER DEVELOPS LIGHTING SYSTEM

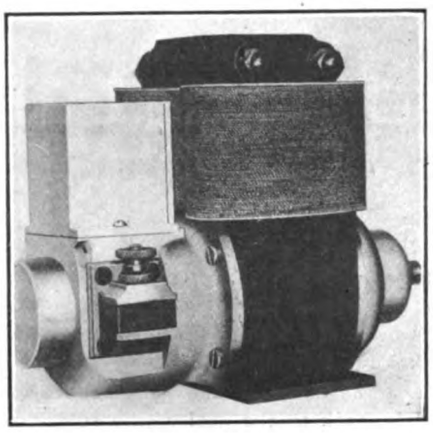
Fisher Generator Is of the Self-Contained Electrically Regulated Type —Constant Voltage and Increasing Amperage.

Emphasizing appreciation of the unmistakably growing popularity of electric lighting systems and the natural tendency toward their adoption as the solution of illumination problems, the Fisher Electrical Works of Detroit, Mich., after several years years' experimentation, just has brought out a dynamo electric lighting system embodying a number of features characteristic of its producer's 35 years' experience in the construction of electrical equipment of practically every description.

In developing the Fisher generator, cognizance has been taken of the desirability of simplicity and the reduction of necessary attention at the hands of the owner to the minimum. To this end, the dynamo has been made entirely self-regulating within itself and without the addition of resistance coils, manual or mechanical regulating devices. Incidentally, it operates at crankshaft speed, generating full voltage at 300 revolutions a minute, thus eliminating many of the difficulties inherent to high speed machines and reducing wear and tear on the armature bearings. Its principal characteristic is that the current output never exceeds a maximum of eight amperes throughout a range of armature speeds between 300 and 2,000 revolutions a minute. The weight of the machine is 24½ pounds.

In appearance, the Fisher generator suggests not a little the well-known Edison type dynamo, which for a long term of years has been the recognized standard in construction. The fields are of the inverted U type, which design was chosen as much for its applicability under practically all conditions existing under the present regime as it was for its electrical efficiency. This construction permits the minimum distance between the center of the armature shaft and the base of the generator; in the generator illustrated the distance is 1¾ inches, including a non-magnetic baseplate 3/16 of an inch in thickness. Owing to the construction of the base, any shape or thickness of mounting plate may be used, the minimum distance between the center of the armature and the base plate being realized when the machine is mounted directly on the aluminum crankcase of the motor.

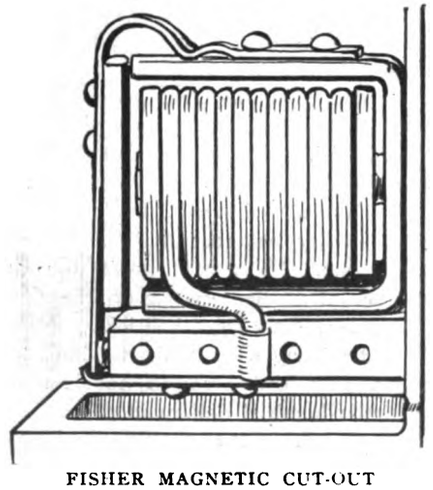
Reflecting modern practice, the fields and pole pieces of the dynamo are drop forged of material particularly suitable for the generation of a magnetic field of maximum intensity. These field and pole pieces are accurately machined and are interchangeable. They carry the field coils which are wound directly on the drop forgings in the usual manner. The armature is of the drum-wound type, with straight slots only semi-closed by the winding, which consists of cotton covered wire, enameled and afterward baked and treated with an oil and



FISHER U-TYPE GENERATOR

waterproof varnish, making it to all intents and purposes impregnable and practically indestructible. The armature shaft is steel and is mounted in high grade ball bearings of liberal capacity.

Unusual care in construction is revealed



FISHER MAGNETIC CUT-OUT

in the commutator, which is formed of hard drawn copper, thoroughly insulated, with mica band rings and segments. It is assembled without the use of screws of any kind, though its rigidity is no indication of their absence. The brushes, which are held in place by cover springs and thus are easily removable for replacement in the event of wear, are formed of copper mesh carbon and are equipped with pig-tails by way of ensuring positive collection of the current. End plates are aluminum, accurately machined and interchangeable.

The automatic cut-out, indispensable to all such systems, is an electro-magnetic device mounted in a tight housing directly over the commutator, where it is instantly accessible. In its simplest aspect, it is merely an electro magnet connected in such a way that when the dynamo current exceeds the battery current, the cut-out coils become energized and drawing a movable armature mounting a contact against another contact which is held stationary, establishing a connection between the dynamo and the battery. Of course, immediately the engine is stopped, the cut-out armature returns to its normal position under the action of a spring and thus breaks the connection between the dynamo and the battery, preventing the latter from discharging itself.

As indicated by a capacity curve, the generator delivers its full voltage at 300 revolutions per minute, and at 380 revolutions current of one ampere is passed to the battery. At 950 revolutions the current curve rises to six amperes, and from that speed up to 2,000 revolutions a further gradual rise to eight amperes is made. The theory behind the design is, briefly, that it is the better proceeding to charge a battery continually at a low rate than it is to charge periodically at a high rate, which may or may not be deleterious to the battery.

Tire Wear and "Squareness" of Wheels.

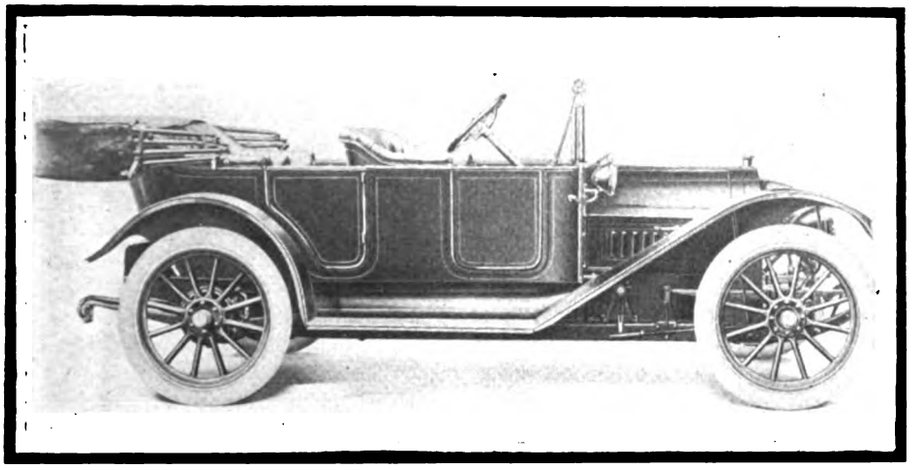
Although it is fairly well known that tires will not last and give service for the length of time stipulated in their guarantees, if wheels are not properly lined up "square" with the chassis frame it is not generally known that to measure for "squareness" merely by making certain that the distance between the fronts and rears of the same set of wheels is the same is not sufficient. After a car has been driven for a couple of seasons, or even less, its springs "settle" to a certain degree, and unless they all "settle" the same amount the axles may be thrown slightly out of alignment. Front springs, where no radius rods are provided, are the most frequent offenders in this respect. The fact that cars are driven considerably with but a single passenger, and he the driver, thus placing more weight over the right front spring, serves to augment the trouble. Periodically, the front wheels in particular should be tested to make certain that they are parallel with the chassis, the easiest method of making the test being to stretch a string parallel to each of the front wheels and to the chassis; in this way discrepancies may be checked. In some cases it may be possible to correct slight disalignment by shifting the spring pad, although in others nothing remains but to fit a new spring or springs.

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NEW REGAL OVERHUNG IN UNDERSLUNG LINE OF CARS

Has Low Center of Gravity, However, and Prepossessing Appearance Due to Its Spring Suspension—Underslung Models Refined.

Conspicuous as being among the comparatively few embodying the underslung principle of contsruction, the Regal line of cars, which is produced by the Regal Motor Car Co. of Detroit, Mich., has been rendered a bit more conspicuous by reason of the addition of a brand new model designed after the pattern of the older model L 30-horsepower car, which for several seasons has been the sole remaining Regal exponent of the more conventional method of mounting the frame above the axles instead of below them. With but few alterations to change either their appearance or their construction, the two underslung chassis, models T and H, are continued.

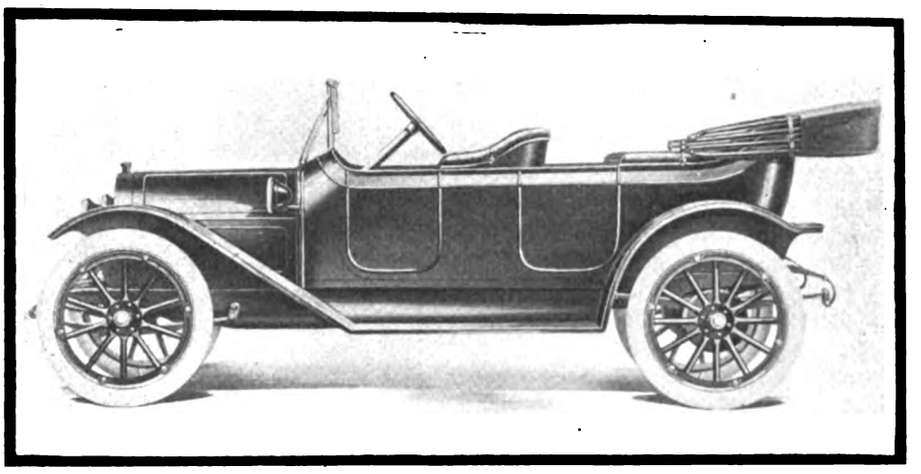


REGAL MODEL T UNDERSLUNG TOURING CAR, WHICH SELLS FOR $950

New Model Largest in Line.

The new car is styled model C, and though nominally its frame is of the overhung type advantages of greater stability inherent to the older model L car have been retained in the new model by mounting the front springs beneath the axles instead of over them and thus materially lowering the center of gravity of the car. The rear springs are mounted in the orthodox manner above the axles, though they are of the three-quarter elliptic type and thus differ from the full-elliptic springs used in the older model. It is but natural that the new model should reveal many of the Regal earmarks, though the component parts themselves are larger throughout and stronger and exhibit a well-defined tendency toward a general refinement of design.

The power plant of the new car is a four-cylinder block-cast motor of the long stroke type in which the bore and stroke measure 4 inches and 5 inches, respectively. The motor, which is shown by the accompanying illustration, presents an unusually clean and compact appearance, due in part to the judicious disposal of its accessories, such as the magneto and water pump, and in part to the integral coring of the intake and exhaust passages. One of the distinctive features of the engine is that the crankcase is divided along the line of the crankshaft in such manner that the upper main bearings, which are three in number, are supported in the upper half of the case, while the lower bearings are supported by caps held in place by heavy studs, increasing the accessibility of the bearings and permitting unusual rigidity of construction. The motor is mounted on the main chassis frame by means of extending arms cast integral with the crankcase. Cooling is effected by pump circulated water, air draft being induced through the radiator by means of a ball bearing mounted fan carried in an adjustable mounting. For ignition, a dual high tension system is employed; lubrication is by the conventional constant feed pump over splash system.



REGAL FIVE-PASSENGER MODEL C OVERHUNG TOURING CAR

Standard Regal Construction.

In the design of such units as clutch, propeller shaft, change gear mechanism and axles, the standards set by the earlier Regals have been followed fairly closely, differences in the sizes of parts commensurate with the greater power of the engine having been made as a matter of course. The clutch, therefore, is of the cone variety, providing liberal engaging surfaces, and the change gear mechanism is of the selectively controlled three-speed type; the same gearset is used in all the Regal cars, its design and construction having been proved over years of service.

Electric Lights in Equipment.

The wheelbase of the new car is 116 inches and provides liberal base for the use of a roomy body in which the comfort of passengers has been the main consideration in design. From a purely esthetic point of view, the body presents an appearance inherent to well-blended lines and the substitution of curves for angles wherever possible. Lending an air of distinction to the idea embodied in the design, a 2½-inch band encircles the top line of the body and is finished in light blue, in contrast to the darker shades of the body and running gear. Metal parts are finished in nickel plate. Demountable rims are a feature of regular equipment and the wheels, both front and rear, are shod with Morgan & Wright 34 x 4 inch tires.

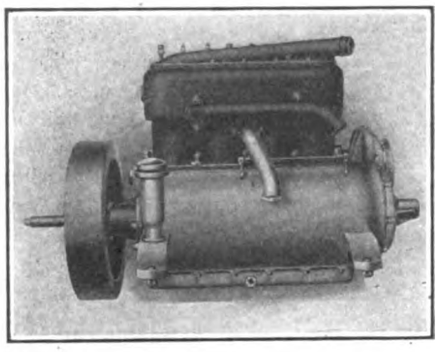
In the matter of equipment, which is included in the selling price of $1,250, little is left to be desired. It includes an electric lighting system consisting of a storage battery of liberal capacity and the usual complement of head, side and tail lamps (gas head lamps and Prest-O-Lite tank are optional equipment), mohair top with boot

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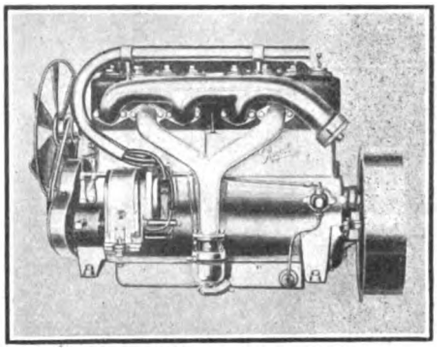
and side curtains, windshield, speedometer, electric horn, tools and tire repair outfit.

As has been stated, the revision of the two underslung chassis in the line has altered but little their familiar construction. The larger of the two models still employs its 4¼ x 4½ inch motor, in which the cylfolds attached in the orthodox manner. Both are equipped with high tension dual ignition systems and are cooled by the thermo-siphon system. In both models, clutch and gearset are the same, the former being of the well-known Regal cone variety and the latter of the three-speed selectively opershield and speedometer also are included.

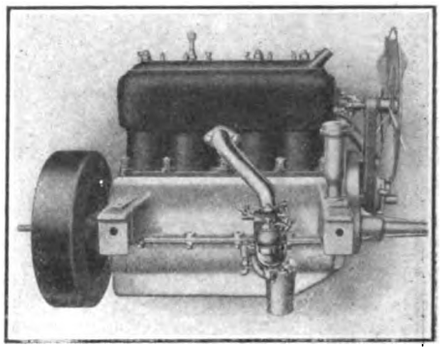
By way of rounding the line out and making it as complete as possible, it also includes a clever underslung three-passenger coupe mounted on the model T chassis and listing with complete equipment at $1,250, and an underslung roadster, styled



REGAL MODEL T MOTOR



REGAL MODEL H MOTOR



REGAL MODEL C MOTOR

inders are cast in pairs. Similarly, model T retains its 3¾ x 4½ inch long stroke motor with but few alterations, and those that have been made affecting efficiency rather than appearance. These two motors differ in that the latter is block cast with its intake and exhaust passages cored integral whereas the former has its cylinders cast in pairs with the intake and exhaust manated kind. The wheelbase of the larger model (model H, which rates at 36 horsepower) is 118 inches and, with the same equipment as listed for model C, it sells at $1,400. Model T, which really is the leader in the line, and lists at $950, mounts a modish five-passenger body and the equipment is the same, with the exception that $75 is added to the list price if top, windmodel N and mounted also on the same chassis, carrying the long-stroke 3¾ x 4½ engine. The roadster lists at $900, including the following equipment: Option of either electric lights and storage battery or gas head lamps and Prest-O-Lite tank, electric horn, tools, tire repair kit and jack. The addition of top, windshield and speedometer increases the price by $75.

Tool Steel That Saves Much Labor.

One of the curious phases of the modern development of steel for cutting tools used in manufacturing metal articles is the fact that some of the steels can be made to cut so fast that they attain a dull red heat, and still do not lose their hardness or cutting qualities. Such steels do their best work when so hot that ordinary tool steel would be as soft as machinery steel and, of course, quite useless for cutting purposes. This remarkable tool steel is the basis of the amazing rapidity with which motor car parts are turned out, not only permitting fast cutting, but also minimizing the time required for grinding and re-setting tools. The material of which such tools are made is styled "high speed" tool steel and may be obtained in wide variety.

Utilizing a Motor to Start a Motor.

In the motors of gasolene tractors it is impracticable to obtain high power by running at high speed, and so the other alternative is taken; the cylinder dimensions are made sufficiently ample to enable the motors to develop the required power at a medium or slow rate of speed. These big, heavy motors are naturally hard to start, because of the very considerable amount of power required to turn them over. In the case of a motor such as that which drives the 105 horsepower tractor shown in the accompanying illustration, the product of the Daimler Co., Limited, of Coventry, England, the starting would be almost too big a task to be accomplished by hand, so a small air-cooled motor is installed for the



DAIMLER 105-HORSEPOWER TRACTOR

purpose, taking gasolene from its own separate tank and driving the crankshaft of the main motor through a chain and suitable gearing. The arrangement of the starting motor, tank and chain drive are clearly shown in the illustration.

To Test Shock Absorbers in Belgium.

In Belgium, where a series of tests were made which threw more or less light on the problem of mudguard efficiency, another series of tests, this time to determine the jar and jolt lessening proclivities of various types of shock absorbers, soon is to be held. The Automobile Association of Belgium has arranged to carry on the tests, and they will be made on a "specially roughened" piece of roadway one kilometer in length. A speed of 25 miles an hour will be required, and the nature and intensity of the vibrations produced on the chassis will be recorded by means of a special instrument the records of which will form the basis for the judges' awards. After tires have been inflated to a predetermined pressure, each car will be required to make two trips over the course, one with the shock absorbers in place and one with them disconnected. More specific conditions of the contest have not yet been made public.

Care in Choice of Hacksaw Blades.

A hack-saw for cutting brass, copper or other soft metal should have coarser teeth than a saw employed for cutting iron or steel. For cutting thin metal, whether sheet or tubing, fine teeth are best. By observing such precautions, it is possible to make saw blades last much longer than if inappropriate grades are used.

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REILLY ARRAIGNS "ONE MAN" ESTABLISHMENTS

He Boils Over After Seeking to Do Business in Two Places That Lacked Lieutenants—Shows the Need of Delegating Authority When "Boss Is Out"—The Reilly Way Explained.

Whether a tightly fitting hat is conducive to self-control during moments of mental disturbance or at times when the owner of the hat is provoked to anger, is a problem for psychologists; whatever the answer, as Reilly emerged from a big store dealing in accessories he jerked down his knockabout hat over his forehead and, looking neither to right nor left, moved rapidly down the street. Two blocks further he went into a second accessory house and, endeavoring to appear more pleasant than he felt, approached a salesman.

"Do you carry a line of mechanical horns?" he asked.

"Yes, sir."

Attempting Business with a Subordinate.

"What's the price to automobile dealers?" said Reilly, naming a horn and handing the salesman his card.

The salesman named a price which Reilly knew was the retail price.

"Isn't there a lower price for dealers?"

"I believe there is one," responded the salesman, "but the manager doesn't put many of those things down on paper and I wouldn't dare make a price. I'm sure, however, that he will make a price for you if you see him."

"Where is he?"

"He's out just now, but if you will come back——"

Meets with no Success, so Leaves.

"I haven't time to come back," interrupted Reilly; "I'm in a hurry. Does business stop when the boss is out?"

"Not exactly," explained the salesman, and he would have done his best to smooth things, but Reilly was almost at the door, and as he made his exit the yank he gave his knockabout hat brought a protest from the strained and almost ruptured cloth.

The four blocks between this store and Reilly's own establishment were not sufficient to permit his brain to cool, and the factory Sales Manager, who had dropped in during Reilly's absence, saw, as Reilly slapped the hat on a hook in the coat room, that trouble was written voluminously on the lofty forehead which began in the proper place but extended almost to the back of Reilly's neck.

"I just dropped in on my way through town," ventured the Sales Manager. "I also had a little business and didn't know but I would have to leave before you came



"DOES BUSINESS STOP HERE WHEN THE BOSS IS OUT?"

back, so your right hand man helped me out."

"Did he? That's fine!"

"Yes. You know, you have two cars scheduled for the first of the month. Well,



REILLY GAVE HIS HAT A YANK

we would like to have you take one now and the other the middle of next month, if you don't mind. Your assistant said it would be all right."

"All right it is," said Reilly, by this time quite amiable. "What he says goes. When I'm out he comes pretty near being Reilly."

"But why the frowns?" asked the Sales Manager.

The Capable Assistant Acts.

"The same thing that makes you look so pleasant," retorted Reilly. "You came here to do business and did it. I have been trying for a half hour to do business and didn't do it, and all because some establishments stop doing business when the boss leaves the office."

"What's the reason?"

"There is no real, sensible reason. It's foolishness! To start with, I saw a chance to use a few mechanical horns, electric or otherwise. I haven't bought any in a long time—that is, to amount to anything—so I wasn't up on dealers' prices. I went to one shop a couple of blocks down the 'row' and tried to do business, but the boss was out. The clerk who is supposed to be in charge at such times knew as much as the boss expects him to know, but he didn't dare make any promises about anything; and there you are! I probably wouldn't have been such a valuable acquisition in the customer line, but I would have been a new one, and every new one a man adds to his list means that much more business. Too many men make the mistake of making the whole business center around themselves. They don't want anyone else in the place to know as much about the business as they do, because they think they would be losing in dignity or something else.

Wrong System May Do Great Injury.

"You can see what a difference it is capable of making. You came in here to ask about something that meant considerable to you; if you couldn't have found out it would have tied things up for you in several places and the delay all around would have been injurious. But—although you couldn't find me you found someone else with whom you could do business. You got what you wanted and my assistant was able to talk as if he knew what he was talking about. Once he made the arrangement there was little likelihood of its being changed.

"It's a lesson I learned in the school of

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experience. When I began business I was all alone; I didn't need a salesman, and I managed to get along without even a stenographer. But when things began to grow I got the office girl and some time ago I got my assistant, the salesman. At first I had that mistaken idea that he ought to be a sort of underling and not know too much about the business. But I gradually began to realize that the arrangement was a mistake. Personally, it kept me tied down. I had to be here every minute or stand a chance of losing business. The salesman kept running to me for every little thing and I got tired of it, too.

Developing an Assistant Manager.

"One day I had a talk with him, and told him I was going to make him my assistant, not only in title but in reality. I began to let him into the business secrets, if they may be called secrets; of course, he had demonstrated that he was a fit and reliable man. I gave him access to the office records and the correspondence and gave him every opportunity to make good on the new and broader job. The result was that whenever I was out and anything came up he handled the matter, and although I am often inclined to disagree with him in some minor detail, I seldom say anything about it. He has gained confidence, and the more he does of this work the better he gets at it. Only once have I changed any decision he made.

Knows Much of Employer's Affairs.

"To-day, for instance, he knows about the two cars scheduled for the first of the month and he knows that we have one customer who will take one anytime between now and the first of the month. That disposes of the car you wanted me to take now. As for the car you want to hold off until the middle of the next month, he knows that, so far as we know now, there is no rush for it. We are willing to be accommodating, and he knows just as well as I do what can be done. I have no hesitation in going away for a week, for I'm sure the business will go on all right. The salesman gets a good salary and commission and is the kind of man who takes an interest in what he does. He is just as anxious as I am to see the house make money, and he isn't afraid of responsibility, which is what's the matter with a whole lot of men. If I should be taken sick and be kept out of the shop for six months the business would go on as usual, without a hitch; I am confident of it.

Few Secrets Between the Two.

"One thing we are agreed upon. If I do anything or contemplate doing anything in a business way I let him know about it and, of course, it is his duty to let me know about everything he does. If it is the matter of a prospect about whom he does not happen to know all he should know, the office records will show him very nearly all he needs to know. Similarly, the correspondence will reveal considerable information of great value. One who has not attempted gathering facts from this source will be surprised at the information he can gain from rummaging through the letter files.

Diagnosing the Real Trouble.

"The trouble in the two accessory houses I visited to-day is that they are run by managers. The head offices are in New



"I MADE HIM MY ASSISTANT—IN REALITY"

York or some other far away town, and the manager of the local house likes to have it known that he is manager, or else fails to realize the injury he is doing the business, and therefore himself, by not having someone in authority under him. It certainly is provoking to go into a place and be told that you will have to postpone your business because the boss is out and no one else can take care of you. I would rather have a good assistant and have him make a few mistakes than have one who couldn't do anything at all. Even the office girl——"

Even Office Girl is an Assistant.

Reilly stopped abruptly as he saw the young woman mentioned returning from lunch.

"O, Mr. Reilly," she said as she entered, "I met Mr. Cowan uptown just now—the man who's going to get a car the first of the month—and he wanted to know if he couldn't possibly get it a few days sooner; the weather is so fine. I heard what was said this morning about our getting that car earlier, so I told him I thought he could have it in a day or two. He said he would expect it in three days unless he heard otherwise."

"All right," said Reilly; "he won't 'hear otherwise.'"

"How many capable assistants have you, anyway?" asked the Sales Manager.

"That's two that I know of," said Reilly, as the girl began to click the keys in the adjoining office.

Noises that May Arise in Clutches.

So various are the designs of plate clutches both of the "dry" and "wet" varieties that the wise repairman will carefully study the peculiarities of each individual type before desiding what is the actual trouble. "Noise in the clutch" is the commonest symptom, and beyond the fact that there is a noise, the layman cannot for the life of him tell what is the matter. In many instances the noise is a peculiar idiosyncrasy of the make of car and cannot be overcome.

A certain make of car was fitted with a dry plate clutch with seven steel male plates and six raybestos covered female plates, and while the clutch was "in" it ran as sweetly as could be desired. But disengaging it caused a grating noise which puzzled not a few. It was found, however, that after the car had run about a thousand miles the noise diminished almost to the inaudible point. The reason for this was that when the plates were new there was very little space between them, but after running for a while the surface of the raybestos became smoothed down, and the steel discs polished, the space between the plates automatically increased. The constant pressure on the raybestos has compressed it slightly, and this also had a tendency to overcome the "trouble."

When the clutch was originally designed sufficient clearance was allowed to prevent the rubbing on disengagement, but it was found that after the wear had taken place it was necessary to take down the clutch and add one or two additional plates to counteract the effect.

Mirror on Roof of Closed Cars.

By way of ensuring an unobstructed view of following traffic, the owner of a rather bulky limousine has displayed no little ingenuity in the location of a mirror for that purpose. Because it was not always possible to see clearly with the aid of a mirror placed beside him in the orthodox position, he adopted the novel method of placing it above him, on the roof of the car. As he could see the mirror, he cut a small rectangular hole in the roof, and to prevent the ingress of rain he closed it with a sheet of heavy plate glass. Under the new arrangement he can obtain an unobstructed view of the traffic behind him, regardless of the closeness of vehicles, which ordinarily obstructed his view through the mirror at the side.

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MAKING STORAGE BATTERIES DO DOUBLE DUTY

How a Dealer's Sharp Eyes Saw Opportunities for Getting Extra Work Out of Accumulators—Paying for New Batteries With Work Done by Old Plates—"Wireless Transmission" of Current for Illumination.

"After a rather long and very varied experience in the electric vehicle business, more particularly at the storage battery end of it," remarked a dealer in the weighty combinations of lead, water, acid and rubber that serve to store up electrical energy, and to propel electric vehicles, "I have made up my mind that the dealer who wants to make sure of the butter on his bread in the future must lay himself out to show his customers that electricity is the best motive power for motor vehicles, under proper conditions, and that it is capable of doing better work than most people get out of it.

Assisting the Novice Pays.

"A very large proportion of the rapidly disappearing troubles that occur in electric vehicle installations is due to causes that can be overcome all the more readily because they do not originate in the electrical apparatus itself—that is to say, they are caused by misuse, misunderstanding or ignorance in some shape. A purchaser of a battery who has had no experience in that line needs a good deal of help in little things, and it pays, and pays handsomely, to take a good deal of extra trouble to help him out.

Enthusiasm Begets Enthusiasm.

"For one thing, the battery 'stays sold,' and the user is contented and is a booster for the use of electric power; and, for another thing, there is no doubt as to where he will go when he wants renewals or another battery. Besides, he is much more likely to widen the scope of his electrical activities if he is thoroughly pleased and a little more than satisfied with his first installation than if he is only half-hearted in his belief in the practicability of the electric. In other words, what I want to do is to make every customer I have just as enthusiastic as I am. I have seen both sides of the business, and I tell you I am getting more enthusiastic every day."

Remuneration May be Tardy.

One of the fixed ideas of this particular battery dealer is that there are a good many ways in which storage batteries can be made to save money for their owners, if only such openings are sharply watched for. It may take a good deal of planning and involve a good deal of work—mainly mental labor—on the part of the dealer, for which he is not remunerated directly. But, to quote the dealer in question, it pays handsomely in the long run.

Putting Theory into Practice.

A case in point will serve to elucidate the theory and its practical working. A certain manufacturer not more than a thousand miles from New York City runs his machinery with a steam plant, and he has a dynamo which furnishes current for whatever electric lighting is required during the day and the early winter evenings, and for a few electric motors, including an elevator motor. In this way his current expense was so small that it was difficult to separate it from the general running expense, and when the time came when motor vehicles were needed for the transportation of merchandise two electric trucks were decided upon. Two batteries were purchased for each, one of which was charged during the day while the other was at work in the truck. The installation is a success, from a trucking point of view, and the owner is satisfied with it.

Some battery dealers would have been quite content with such a showing, and with reason. The dealer in question, however, was not—that is to say, he was "satisfied, but not contented," to use his own expression. He wanted to arouse something akin to enthusiasm for electric power, and he watched with the proverbial "eagle eye" for an opportunity. One came.

Storage Battery Runs Elevator.

It seems that the manufacturer found it necessary to use a considerable amount of electricity at night when the steam plant was shut down, and for this purpose an electric company's service was installed and current used through a meter at an expense that was very considerable. It was the only alternative, apparently, to running the big steam engine, which of course was out of the question owing to the size and expense of such a proceeding. Here the battery man came to the rescue.

After the first batteries had been in use for a gratifyingly long period and were ready to be sold to the junk dealer and replaced with new elements, they were not sold to the junk dealer. Instead, the plates were transferred to a set of glass battery jars conveniently placed in the factory, and were properly "burned up"—that is, the connections were made by fusing together the lead straps of the elements in the usual way. The two batteries were connected as one with the factory main wires, and suitable connections were made so that they could be charged while the plant was running during the day. The current so stored was utilized for electric lighting and running the elevator motor at night, in place of the supply company's current.

Inherent Qualities of Apparent Junk.

The plan is a complete success. While the batteries are of no use for vehicle work, they have sufficient capacity for the far less exacting service required of them as stationary batteries, and it is a rather curious fact that the old plates in their new positions are good for some 18 months' service. And after this—when the last possible week of service has been extracted from them—they are sold to the junk dealer at a price just as good as if they had been sold immediately on being removed from the truck, for the material the junk man is looking for—the lead—is undiminished in weight.

The expense of the stationary battery installation was by no means heavy, and the expense of maintenance is practically nothing, for the charging current, as already stated, costs so little as to be negligible, the used-up plates from the trucks are sufficient to keep the stationary battery in working order and the jars of course do not require renewing, except in the rare case of accidental breakage. Factory employes assemble and "burn up" the elements.

Old Plates in New Cells Save Expense.

The result, so far as the owner's pocket is concerned, is that the money saved in electric light bills is very nearly sufficient to pay for the periodical renewals of the plates in the truck batteries—a truly gratifying state of affairs. The plan is very far beyond the experimental stage, as it has been working for several years. It hardly is necessary to add that the proprietor of

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that factory has the highest possible opinion of the advantages of electricity as a motive power.

Light Companies' Supply Prohibitive.

The same battery dealer told of a case that is somewhat analogous to the one described, in that it involves the use of current charged into a storage battery from a factory plant of such capacity that the amount of "juice" absorbed by the battery hardly can be traced on the books. The affair hinges on the fact that the proprietor of the establishment in question built himself a very fine residence at some distance from his place of business, and found that, owing to its somewhat isolated location, the electric light company refused to supply current unless the owner paid the expense of running the wires from the nearest available tapping point to his house. The expense involved was prohibitive, so the house was finished and wired, but the company's current was not carried to it.

Vehicle Battery Lights County House.

As in the other "story," the battery man came to the rescue. The owner of the house possessed two electric broughams, and one of these he used every day, rain or shine, in traveling to and from his factory. Arrived at the works, he would put the battery on charge, and by the time he was ready to go home it was "full up." And now comes the interesting part. Arrived at his garage, he would connect a plug from his vehicle battery to a receptacle in the garage wall; this receptacle is connected with the electric light wiring of the house, and, with 80-volt tungsten lamps in all the fixtures, there is plenty of current available for all the illumination that possibly can be required, with a wide margin for special occasions, such as Sundays and holidays, when no charging is done.

Some Figures About Consumption.

As a matter of fact, a little figuring shows that under ordinary domestic conditions the battery hardly would know that it was being drawn upon for overtime service. The popular size of tungsten lamp consumes 20 watts per hour. Twenty such lamps, burning simultaneously, consume, of course, 400 watts. Suppose, to go a little to extremes, there were fifty such lamps burning all at once—a total demand upon the battery of 1,000 watts. A vehicle battery having 11 plates per cell has a normal, easy discharge capacity of 30 amperes at about 80 volts, assuming that there are 40 cells, which amounts to 2,400 watts. This answers the question of the capacity of the battery for the work in an entirely satisfactory way. Shorn of all technicalities, the case presented is that of a man manufacturing electricity at his factory, carrying home a load of it by its own energy, and using it when he gets home to illuminate his house. This surely is wireless transmission of power, for there are no wires from the factory to the house, yet it is factory power that lights the house lamps.

Battery Solves Complex Conditions.

It is true that such plans as those described would not work in many instances; the conditions were somewhat out of the ordinary, and the plans had to be worked out to conform with the conditions. But this is exactly the point made by the live-wire battery dealer. He maintains that the storage battery is capable of rendering service that will fit conditions that are unusual, and, if the various phases of the matter are worked out properly, that it will render service with which no other source of energy can compete. It is up to the battery man to keep his weather eye open for conditions and combinations of conditions of which advantage can be taken to benefit the battery owner, which means, indirectly, that the entire electric vehicle industry is enriched by the addition of another enthusiast—and that the battery man has added a little more prospective butter to his future bread.

Bouncing as Test of Steel Balls.

Ingenious and instructive as are some of the methods of testing materials and products, it is doubtful if there is any more ingenious method than that employed by the manufacturers of several brands of balls used in ball bearings. The finished steel balls are permitted to drop from a predetermined height onto a polished and hardened steel plates. The height to which they bounce serves as an indication of their hardness and the amount of deflection of their path from the straight line indicates their sphericity.

Worn Brake Pins Source of Noise.

Wear on brakes is by no means confined to the friction surfaces of the bands and the drums. The pins and eyes also wear, and not infrequently exposure to dust is responsible for rapid cutting away of the bearing surfaces so that there is considerable play not only crosswise but endwise. A very considerable proportion of the noise and rattling of a car that has been in service for some time can be traced to loose brake mechanism, and in taking up such wear, or removing the worn parts, care should be taken to eliminate the endwise play of the eyes on the pins, as well as the play in other directions. Another source of noise lies in brake rods that touch the chassis.

Gauge to Suit all Shapes of Tanks.

Despite the large number of dash appliances which now are on the market intended to show the contents of the fuel tank at a glance, with any number of people the old idea of using a rule or even a stick to determine the quantity of gasolene in a tank is still adhered to. Taking advantage of this conservatism, the Goodnow Mfg. Co., Boston Mass., has recent placed on the market the measuring "stick" shown in the illustration, and which has the advantage over the ordinary rule in that, after first adjustment, the device is direct reading, no matter what shape or form of tank obtains. The device is handsomely finished in black stained hard wood, is made in two lengths, 15 inches for cars with tanks which have a capacity up to 20 gallons, and 24 inches for cars with tanks with capacities up to 30 gallons. On the face of the rule are provided adjustable brass sliders numbered consecutively from 1 to 20 or 30, as the case may be, and a larger brass pointer, which also is adjustable. The device is adjusted by filling the tank a gallon at a time and adjusting the pointers to correspond with the level of the liquid for each gallon introduced. Where rectangular sided tanks obtain, the sliders, obviously, will be evenly spaced, but where round or oval tanks are used or tanks of irregular form, such will not be the case. The pointer is used to mark the level of the fuel at any specific time.



Simple Method of Protecting Tires.

If a car is kept in a garage which has its floors always covered with oil and grease, it pays, especially if the car is in the garage a considerable part of the time, to let the tires rest on pieces of wood to protect them from the effects of the unguent stuff. The car can be stopped a foot or more back of its place, the boards put down in front of the wheels, the tires wiped clean and the car run up, all of which takes but a few minutes and is well worth while.

Handy Test for Viscosity of Oil.

A very rough-and-ready test of lubricating oils may be made by rubbing samples between the thumb and finger. The more "body" an oil possesses the longer it will withstand friction without allowing the thumb and finger to come into comparatively dry contact.

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GARAGEMAN WHO KNOWS WHY PROFITS VANISH

Leader in New York Garage Trade Discloses Figures That Strikingly Illustrate Existing Conditions — Expenses High and Leaks Numerous — Some Which Have Been Stopped — Livery Stable Days Compared.

That the garage business is not a money making venture at the present time and that when money is made in such an establishment it generally is not as much as it should be in proportion to the investment, is the plaint of the garage trade in general. Just where the money goes—or fails to come from—is more or less known, although there are garagemen, and their name is legion, who know so little about the science of their business that the knowledge they do possess is not of the helpful sort.

Known Costs and Profits Valuable.

When, therefore, a man is found within the trade who can put his finger on every item of income and expense and show how much he gains or loses, his brothers in the business should be quick to study his figures. And such a man is William Burrows, secretary and general manager of the Niagara Livery & Motor Car Co., of 69-75 East 89th street, New York City, and Burrows, it may be added, also is vice-president of the New York Garage Association and president of the East Side Garage Association. He is a leader, not only in his district but in the city at large.

Burrows has his books gone over regularly by an auditor, who shows him how much he gains or loses and, figuring on a full capacity of 125 cars, the auditor tells him he can make $316 a month on his storage, yet because of the varying seasons of the year, the books for the combined months of July and August last show that Burrows lost exactly $1,171.41. This condition prevails in varying degree for the five months of the summer season. During the other seven months the books show a profit, but for the twelve months the profits and losses, Burrows states, about equalize each other, leaving the only profits of the business to be taken from the sale of gasolene and other supplies.

Stablemen Welcomed Automobile.

Burrows knows the garage business from the ground up; he and a partner used to run a livery stable, but four years ago turned it into a garage.

"We welcomed the automobile," said Burrows in relating his experience to a Motor World man. "We thought we could make $10,000 a year where we were making but $6,000 or $7,000 from the stable. The first year of the garage my partner was discouraged, the second year he was disgusted, and the third year he quit. Until the first of the present year the business had been making some money through the fact that we bought gasolene at nine cents and sold it at 20. But when it began to go up the profits on the business as a whole dwindled and disappeared entirely."

Garagemen Combined to Raise Rates.

By the month of March, when the price of gasolene had continued to rise, the 17 garagemen in the district bounded by 110th street, Fifth avenue, 8th street and the eastern edge of Manhattan Island determined to make an effort to save themselves. They formed the East Side Garage Association, with Burrows as its head Prices were increased about $5 a car for storage and gasolene was raised from 20 to 25 cents a gallon. A few owners protested, but when the matter was explained to them they submitted; in fact, there was nothing else they could do. One man who left when the rates were raised came back this week to arrange for storage again in the Burrows establishment.

Why Car Costs More Than Horse.

"That's one thing the owner doesn't understand," said Burrows. He doesn't see why we don't make money. Many of my customers used to keep their horses and carriages here. They said, 'Why is it, Burrows, that we used to store a horse for $35 and yet a car costs so much more?' They readily see it, however, once it is explained. Here's the reason: We used to charge $35 a month for one horse, $70 for a team, and every team was entitled to two wagons. Then we employed

1 washer at $15 a week, which is	$15
8 grooms at $12 a week, which is	96
1 floorman at $12 a week, which is	12
1 foreman at $25 a week, which is	25
Making a total of	$148

Also, our lights cost but $50, where they now cost $120; coal was but $65 a year then, and we now pay $125 a month; sponges and supplies cost but $100 a year, where we now pay $250 a month. And, more than that, the chauffeur of to-day does no work at all about the garage. In the stable days the stableman washed the carriage and the chamois rubbing and cleaning all was done by the coachman. Just to show you the difference, here is a table showing the help we now require. This is made up on the basis of full capacity—125 cars; the figures for the horses were based on 100 horses."

Mr. Burrows produced the following statement to substantiate what he said:

LABOR		
Night Gang—		
6 washers	$450	
12 polishers	624	
4 interior men	240	
1 elevator man	65	
1 foreman	110	
2 chamoisers	130	
Day Gang—		
1 elevator man	65	
6 floormen	300	
1 stock clerk	45	
		$2,029
GENERAL EXPENSE		
Garage supplies	250	
Light and power	250	
Coal	125	
Water taxes	50	
Telephone	75	
Repairs and alterations	50	
Postage	10	
Rent	875	
Office supplies	10	
Petty expense	20	
Miscellaneous	35	
		1,750
ADMINISTRATIVE		
Management (office, insurance, legal)	380	380
Interest on investment	150	150
Total operating expenses		$4,309
Total receipts, 125 cars at $37 per car		$4,625
Less operating expenses as above		4,309
Surplus, or profit		$316

"This table, compiled by our auditor, shows a profit of $316 a month with the garage full, and I believe it applies to any garage of this size, for the rent is bound to be about the same and the same number of men must be employed. Our monthly payroll is $2,029. Our rent is $10,000, but, of course, outside of New York City this item might be less.

Cutting the Telephone Expense.

"I am pleased with one big cut I made in expenses, and that was in telephone service. The owners knew nothing about conditions until the East Side Garage Association sent out letters stating that in the future two telephone calls a day would be allowed to each chauffeur, one call to be paid for by the owner and the other by the garage. Before that the chauffeurs had been making an average of four or five calls a day, all of which were charged up to us at five cents a call. Last year my telephone bill was

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$1,500. The chauffeurs used to call the owner's residence two or three times; they would call his office once or twice, and they spent some time calling up their friends. When the letters went out some of the owners told the chauffeurs they would call them up when they needed the car and that the chauffeur was not to use the 'phone at all. Also I put in a telephone pay station in the garage, and my bill has been about cut in half. That means a saving of $750 a year.

Explaining the Storage Raises.

"We have the business where it is making a little money now, because of our raise in storage prices, and in the future we hope to get things on a more businesslike basis. Our past and present rates are:

	Before raise.	After raise.
Extra large, fore-door limousine. ..		$45
Limousine or landaulet.....	$35	40
Small town car, closed.....	30	35
Seven-passenger touring car.....	30	35
Five-passenger touring car.....	25	30
Large runabouts		30
Small runabouts	20	25

At the same time 'gas' went up from 20 to 25 cents a gallon.

"Under the old rate it was costing us an average of $32.50 a car, and we were getting an average of $30. That was a direct loss of $2.50 a car which, before the raise in 'gas,' we could make up on that item. We are making more on the storage, but we are making less on 'gas' than we used to. When it was nine cents and we sold at 20 we made 11 cents a gallon. Now that it costs us 16 cents and our price is 25, we are making but nine cents a gallon profit. This is a loss of two cents under the gasolene profit of a year ago. It sounds small, but using 450 gallons a day, as we do, it means a daily loss of $9, which amounts to $270 a month.

Plans for a Better Future.

"We have plans for the future but cannot put them into effect for some time. What we will do is to get everything on the basis it should be on. Instead of skimping along with a little profit or none at all on storage and drawing the life of the business out of gasolene, we will sell gasolene for a profit of five cents a gallon. At 16 cents it will be retailed for 21 cents, but storage will be raised to where it will pay, and then we can conduct a real business.

"One of the greatest contentions I find is in constantly trying to convince the public that I am not a crook. The owners have an idea that the garagemen, as a whole, are a bad lot, that they are hand in glove with the chauffeurs in grafting and are out to trim the public. That is disagreeable to me. So far I have enjoyed the name without the game, and I believe I can continue to do so. The owners must be educated to the cost of garage running. The more they see of the inside of it the less they are inclined to criticise. Take the several items that go into upkeep, for instance. For sponges, we pay $4.50 a pound, and our sponge bill is about $600 a season. These, with soap, polish, cloths and such things as are needed in keeping cars in shape, bring us a monthly bill of from $250 to $300. On this matter of figures I am not guessing. I have watched things and I know where the money goes. I have $30,000 invested here and am not making a profit that is large enough to be noticed. I think the old horse storage rates have something to do with the rates which have grown up with the garage business. When we started our garage we were glad to get cars at any reasonable price, and we did not know until the prices were pretty well established what a disastrous thing we had done for ourselves.

Municipal Legislation Expensive.

"Another thing that makes it hard is the municipal legislation. Last year I had to spend $300 for fire escapes; my electric equipment, which was approved two years ago, now has to be changed at a cost of $250; we had to put in a gasolene separator that cost from $500 to $700 and is absolutely worthless; we have to have a portable 'gas' tank on every floor—they cost $250—and then keep them outside the building, whereas cars, with thin fuel tanks, can stand in the building. I fail to see the sense in a lot of these regulations. The legislators seem never to think what their laws are going to cost us.

"Higher rates is all that will save the business. Rent keeps going up, and during the slack summer months, when little is coming in, the rent goes on just the same. Also, we have to provide for our employes in some way, working them alternate weeks or some other arrangement, and what profit we make now in the winter disappears in the summer. I make a living, but no profit."

Motor Cars Form Part of Texas Fair.

Housed in the machinery building, along with many other things calculated to render the farmer's daily chores less burdensome, some 19 different makes of motor cars were exhibited by fifteen dealers at the Texas State Fair at Dallas during the week of Saturday, October 12th, to Saturday, October 19th. While attractiveness was added to the display by virtue of the efforts of the various exhibitors, no definite decorative scheme was carried out, each booth being erected and made eye-pleasing by the occupant.

Among the exhibitors were: Moon Motor Car Co., Moon; Studebaker Corporation, Studebaker; Ford Motor Co., Ford; United States Motor Co., Maxwell; Abbott-Detroit Sales Co., Abbott-Detroit; Buick Automobile Co., Buick; Mitchell Motor Sales Co., Mitchell; Halff Motor Car Co., Pierce-Arrow, Chalmers, and Flanders electric; Munger Automobile Co., Cadillac; Hudson Motor Car Co., Hudson and Reo; Davis Turney Automobile Co., Stevens Duryea; Harold Abrams, Stearns; Sacksteder-Potter Co., American; Packard Motor Car Co., Packard; R. A. Cameron Auto Co., Oakland and Hupmobile.

Vulcanization That Roasts Tires.

Despite the comparative ease with which vulcanized repairs may be made on tires and tubes, there still remains a tendency to overdo the work, or, in other words, to roast rather than to repair the rubber. If too much heat is applied, the resiliency of the rubber will be impaired, if not destroyed entirely. It is a mistaken idea to assume that much heat applied for a short time will do the work of less heat applied for a much longer time. It should be remembered that vulcanization is a curing process that requires a certain amount of time in addition to the proper degree of heat and pressure.

Caution Needed with Fine Threads.

In view of the comparatively fine threads that frequently are used in screws, bolts and so forth, in motor car construction, it is well to bear in mind that less force is required to bring a fine-threaded nut or screw to a given pressure than if the thread is coarse, the diameters being equal. A fine thread is less easily jarred off. It is advisable to use considerable caution in tightening small bolts and screws with fine threads, because the leverage, so to speak, is so great that the threads may strip under too hard a pull on the wrench.

Handy Tool for Cleaning Contacts.

A very convenient little tool for keeping the platinum points of a vibrator, or other electrical contacts, in good shape consists of two strips of very fine emery cloth or paper glued to opposite sides of a piece of thin Bristol board. The glue should dry under pressure, so that the strips will be quite flat. This tool will dress both points at the same time and, with a little care, the surfaces will be left flat and parallel.

Lighting Cigar from Pet-Cock.

One of the "freak" methods of lighting a cigar when no matches are available is to open a pet-cock on a running motor and take a light from the burning gases as they shoot out of the cylinder. This will light the cigar—if it does not blow it to pieces first.

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SPECIAL JOBS AND TOOLS FOR DOING THEM

Record System for Shop Puzzles That is Better than Memory—Appliances Intended for One Job Found Convenient for Many Others—Use of Hacksaws in Restricted Places.

There are certain jobs the repairman has to do that may be called more or less routine work, because they are of comparatively frequent occurrence, and little or no question arises as to how they are to be done; no special planning is necessary and there is no "problem" to solve. On the other hand, there are little jobs that are positive nuisances because, though they seem insignificant and are insignificant in a way—especially from the point of view of the owner of the car—they are not readily handled with ordinary tools and methods, and so much time is lost in evolving special methods and special appliances that the cost of doing the work is all out of proportion to what might be expected. Even the repairman himself cannot be sure that what looks like a simple little matter is not going to develop into something of a puzzle, even though long practice helps considerably in detecting the little signs that presage difficulties.

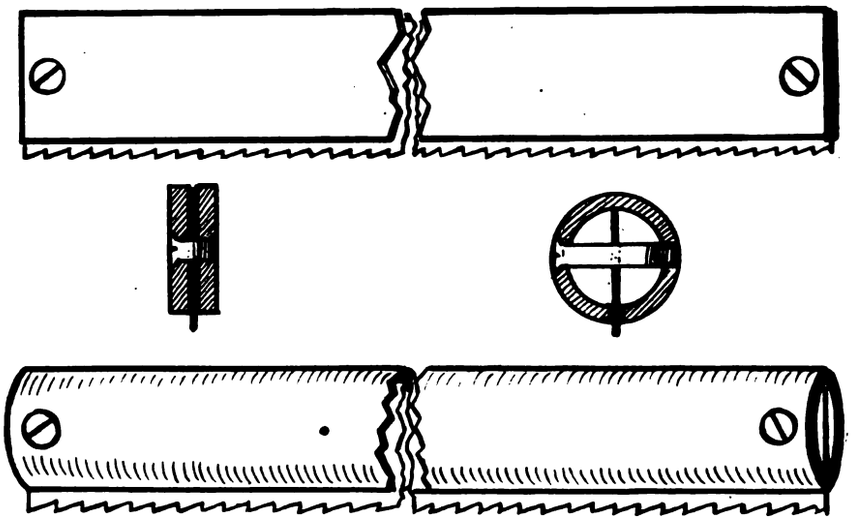
That Which Is Written Lives.

There are many little special tools and special ways of doing things that are worked out on the spur of the moment and practically forgotten as soon as the work which necessitated their devising is finished. If a similar job comes in before the first job has been forgotten and the special tools lost, all is more or less plain sailing; but if, as is too often the case, no one remembers how the thing was done, or if there has been a change in the personnel of the shop, as is by no means infrequent, someone has to solve the problem all over again, and there is a loss of time and trouble and money—to someone—that might very easily have been avoided.

Keep Tools Methodically.

Even in the smallest shop there should be some systematic way of keeping track of special tools and the way in which they were used and the jobs that called them into existence. The amount of time and trouble devoted to this way of laying up something for a rainy day is absolutely nothing in comparison to the saving it can effect even on a single job.

The old-time machinists and fitters were—and still are, where they are to be found—keen on possessing fine tool kits, and many of the tools are sure to be of special design, and possibly of no use except for some particular sort of a job. Nevertheless, their possession is well worth while, for when the demand comes the mechanic is prepared for it, and there is a certain sense of satisfaction in being all ready for an unusual piece of work without any preliminary fussing. But this is a one-man plan; it rarely is of benefit to the shop, as a whole, for most mechanics are decidedly jealous of their ideas and the fruits thereof, and keep their tools locked in their chests and their ideas in their heads, so to speak.



HACKSAW HOLDERS FOR USE IN RESTRICTED PLACES

From Apprentice to Foreman.

There is at least one man, however, whose narrow-gauge pride in his special tools broadened out when the scope of his work was broadened by his elevation to the foremanship of a motor car repair shop. He began as an apprentice in a railroad shop, worked into the "millwright gang," which had charge of all the machine tool setting and repairing, shafting work, power plant maintenance, and so forth—a position which brings with it an enormous variety of work of the unusual kind and makes a fine training for an all-round mechanic. For a first class millwright it was but a short step to the specialized work of the automobile repair shop, and in time the thorough mechanical ground work, added to experience and intelligent interest in automobile work, resulted in a foremanship that was well deserved.

Stealing Employer's Time.

One of the first acts of the new foreman, after he had become somewhat comfortably settled in his new seat, was to lay out a system for the making of special tools and the recording of special jobs. As every mechanic knows, it is usual for a man who wishes to make himself a tool to do the work a little at a time in stolen moments, so that, strictly speaking, the tool so made is the property of the man's employer—more especially as the material usually is acquired in the same way as the time. The new foreman gave instructions that when a special tool was required, it was to made as part of the job on which it was to be used and, after the job was finished, put away, tagged with a number of its own.

Haystacks No Place for Needles.

A record book was kept, and in it were entered details of solutions of mechanical puzzles, and where special tools had been made, their numbers were given; thus the possibility of a much-needed tool being buried in someone's tool chest, possibly the chest of a man no longer in the shop, was eliminated. Furthermore, the tools were within reach of any man who might need them, instead of being available only to a single man.

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In a small shop this system would work just as well as in a large one, for three or four men can "lose" tools and forget things just as well, in proportion, as four times as many. Of course, there are not many of these problem jobs in a small establishment, and the task of keeping track of them and of the tools would be a very small matter; but the saving of time on a repair job would be more important, perhaps, than in a big shop, where the item would be so much smaller in proportion to the output of the place.

Occasion Arises for Ingenuity.

A special tool that was devised by the foreman in question—and, incidentally, may have been devised by many others—was a hack-saw frame which made it possible to use a hack-saw in places so restricted that the ordinary form could not be used at all. A decidedly unusual job was the father of the tool. An old motor, which had been out of service for several years, was sent in to be overhauled. The spark plug ports had been bored out, for some unknown reason, and bushed, the bushing having been purposely rusted in, apparently, with a solution of sal ammoniac or salt, for it resisted all efforts to unscrew it. The metal around the ports was much thinned by the re-boring for the bushings, and it was necessary to proceed with considerable caution; the motor was a light one, too.

Judicious Planning Labor Saver.

The usual method of procedure would be to file a slot through each bushing, cutting into the threads until the metal was so weakened that a light application of a hammer and cape chisel would break the remaining shreds and permit the bushing to be bent inward, toward the center of the hole, and so removed. A file is apt to make a pretty wide groove, however, and as there were none too many threads at best, it was desirable to damage them as little as possible. So the bushings were sawed with the tool shown in the accompanying illustration, which was made in a very short time, and proved to be thoroughly practical.

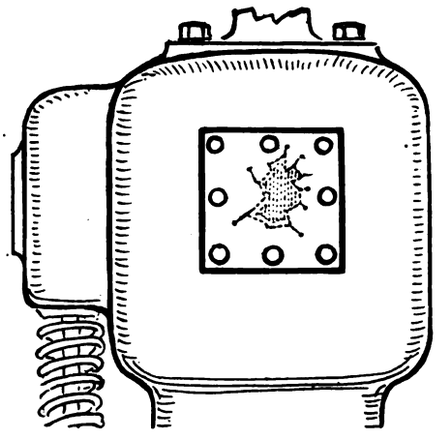
Home Made Hacksaw Frame.

The body of the tool was made of heavy steel tubing. Iron pipe could be used in the absence of the steel stock. The tube was of such diameter that the measurement from the inside wall to a diametrically opposite point on the outside wall was less than the width of the hack-saw blade by the depth of the thread in the outside of the bushing—the reason for which shortly will be made clear. As a matter of fact, the particular piece of tube used was a little too big in the diameter, so a trifle was filed off evenly along the whole length. The tube was split from end to end with a hack-saw, the cut being made carefully to keep it as straight as possible.

How the Tool Was Made.

Two holes were drilled, one at each end of the tube, passing through both walls; each hole—or perhaps it is better to say each pair of holes, as the drill passed through both walls—was tapped in one wall for a 3-16 machine screw and countersunk in the opposite wall for a flat head.

The distance between the holes was exactly the same as the distance between the holes in a hack-haw blade. The holes in a blade were enlarged to permit the fairly easy passage of a 3-16 machine screw. The tube was tapped lightly with a hammer in order to almost close up the saw slit. A fine-toothed hack-saw blade was inserted in the slit, with its back against the inside



SIMPLE WATER JACKET PATCH

wall, the two screws inserted, passing through the holes in the blades, and tightened down, nipping the blade firmly between the tube edges. The toothed edge of the blade projected a distance equal to the depth of the thread in the plug ports.

Emergency Idea Developed.

The tool thus constructed was used to cut slots down the sides of the bushings. It was impossible, of course, to cut too deeply, as the depth was fixed by the projecting blade teeth, and a thin cut could be made. So firmly were the bushings rusted in that it was necessary to make two cuts in each before they could be dislodged. Had the cuts been of any considerable width there would have been considerable opportunity for leakage past the new bushings that were inserted to take the new size of plug that was used. So nicely did the queer little saw work that several were made; in some, designed for use in small holes and other very restricted places, small tubes were used and the saw-blades were ground on the backs to make them sufficiently narrow. In all cases thick tubing was used to give sufficient depth for the threads of the machine screws. A set of holders was made up of flat strips, this method also being illustrated. Each holder consisted of two strips, drilled for machine screws, the blades being pinched between the strips. By making the holes in the different holders different distances from the edges different depths of cut were permitted; each holder provided for two depths, as the blade could be reversed, except where the holes were drilled directly in the middle.

The particular job in question was finished, after the old bushings were removed, by running a tap through the holes to clean out the threads and screwing in the new bushings with a good coating of smooth-on. The cement-like substance effectually prevented leakage through the thin saw-cuts made, and the bushings were firmly cemented in place.

Cylinder Patching Explained.

The same foreman once made a water jacket repair on a very light motor that was a beautiful piece of work of its kind. There was a jagged hole broken in the jacket, with a few short cracks radiating from the corners. The ends of the cracks were drilled with a small drill to prevent the spreading of the fissures, and a patch was put on with screws, which was an ordinary enough proceeding, except for the way in which the patch was bedded down. The curve of the patch was made to conform as closely as possible to the curve of the jacket. Then the patch was lightly smeared with red lead mixed with oil for "marking," and moved slightly while pressed hard on its seat.

Patch Made Good Fit.

The high spots, shown by the rubbing off of the marking on the patch and its transference to the jacket, were removed first with a second cut file, half-round, the flat side being used for the jacket and the round back for the patch. Continuing the process of alternatealy rubbing on marking and filing the high spots, the patch and the jacket began to show so many spots that it was difficult to get at them with the second cut file, so a smaller file, smooth cut, was used to still further bring the surfaces together. When the fine file reached its limit recourse was had to a scraper, and the surfaces were finally worked down to such a finish that there was no leakage when the patch was put on dry. A little red lead was applied before the patch was permanently screwed down.

Fine Work Costs Big Money.

As a matter of fact, this kind of workman-

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ship is entirely unnecessary, and no owner would care to pay for it. In the case cited the work was done merely to show what was possible in the way of hand surfacing. But the principle involved is one that is applicable to all such patching, for the surfacing is the foundation of the job. There is no use trying to make a joint that will not leak when dry. A patch that is fitted closely enough so that there is no tendency to rock on two points, and which leaves no serious crevices for water to pass through, can be made perfectly tight by the application of some good cement, or of red lead, put on quite thickly and squeezed out when the patch is screwed down finally. Incidentally, it is more than likely that some of the cement will fall into the jacket through the hole, when the patch is screwed down; it should be removed by washing or, if the cylinder is small enough, it may be shaken out, before the motor is used. Otherwise there is danger of obstructing the pump or circulating system.

Cutting Thread Without a Tap.

In an emergency a thread can be cut in soft metal, such as aluminum, with a screw similar to the one that is to be used. The screw should be tapered at the end so that it can be entered in the hole to be tapped, and grooved like a tap so that there will be some sort of a cutting edge. Such an improvised tap will not cut much of a thread, but often will make it possible to put in a screw that will hold for a time, especially if there is not much strain upon it.

Folding Rule as Drawing Tool.

A three-jointed folding rule can be used as a fairly accurate square of it is set in the form of a figure 4, a square applied to the two joints that are at right angles and the point of intersection carefully marked with a knife-point. By using the mark as a guide the rule can be set accurately enough for many purposes; if desired, other angles can be marked off in the same way.

Making Over Worn Out Wrenches.

A solid wrench that has been worn or battered out of shape may be put into good condition by any blacksmith by re-forging the jaws, bringing them closer together and afterwards finishing them with a file. If the wrench was hardened this will, of course, soften it and re-tempering or re-case-hardening will be necessary.

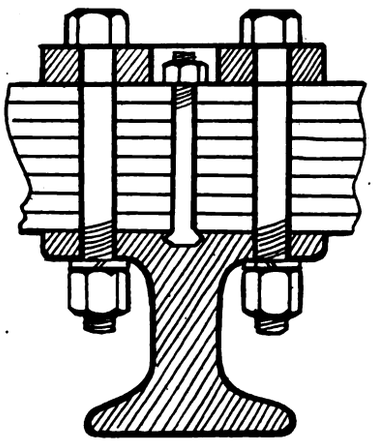
Handy Reamer for Enlarging Holes.

An extremely convenient tool for rapidly enlarging small holes where accuracy is not required is a taper reamer, either square or pentagonal in cross-section, tempered to a dark straw color. It can be used either in a brace or with a T-handle of its own.

REPAIR OF SPRING CLIPS AS AN EMERGENCY JOB

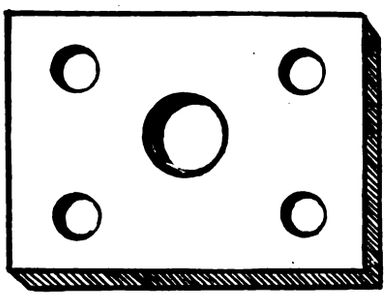
Usually a Difficult Undertaking—Repairman's Ingenuity Makes It Possible—One Way of Solving the Problem.

When called out on a breakdown, repairmen have much greater opportunity of showing their skill than in the seclusion of their shops. When the automobile is taken to the shop, the job to be performed is either a known quantity or such tools and



SECTIONAL VIE WOF CLIP

materials are available as to make it comparatively simple to effect repairs. In the case of roadside repairs the conditions are different. The work is done under the vigilant eye of the car owner and perhaps some of his friends, and if they can be gotten out of a temporary embarrassment with dispatch, the story will be spread far and wide in their circle of friends, redounding greatly to the credit of the repairman and



ILLUSTRATING DRILLED PLATE

probably being the means of bringing him future business.

The repair of spring clips serves as a good example. It is almost a hopeless task for even the largest shop to carry in stock such clips for every type of car, as the forms and sizes of these are so numerous; therefore ingenuity frequently must be brought into play. The spring clips that attach the springs to the front axle are not primarily intended to be in the nature of safety valves, but they act in this capacity at times. Suppose, owing to a collision, any part of the front axle is struck; if the impact is great enough something must bend or break. If the axle is weak it probably will be the axle that will suffer; on the other hand, if the axle is robust and the clips are not, one of them may break and simply allow the axle to slide back without damaging it. Again, supposing that the axle is bent and the clip broken as well; by repairing the clip it often is possible to drive a few miles without danger, although at a slow pace.

It is an axiom for repairmen when they go out on repair jobs not to emulate the plumber who invariably arrives without tools, looks the ground over and goes back to the shop for whatever he needs and as often as he needs it. A breast drill does not occupy much room and always should be taken along, but it is of no use without a few of the more common sizes of twist drills. A small and a large rat-tail file can be used to increase the size of the hole after it has been drilled, in case the bolt has to fit the hole fairly snugly.

The accompanying illustrations show how a spring clip easily can be made on the road within an hour, the necessary material consisting of a piece of plate and four bolts and nuts. The spring perch on the axle will serve to mark off the plate and bolts can be made longer or shorter, as the case demands, by interposing washers or cutting with a hacksaw. This is another tool that the workman should always carry, as its multifarious uses make it invaluable in quick repairs.

Knock Due to Crack in Cylinder.

Although cracked cylinders usually manifest themselves in an unmistakable manner, attended by absolute failure to fire, a crack near the lower end close to the crankcase may be more difficult to locate, though its presence generally can be detected by an annoying knock which develops after the engine has been run for a short time. The knock may not be perceptible when the engine is cold, due to the fact that the crack then is closed tightly. But when the engine becomes heated the metal expands and opens the crack. The knock generally is caused by one of the piston rings catching in the crack.

Turning Broken Battery Jars to Account.

The hard rubber in storage battery jars is of excellent quality, and pieces from broken jars therefore are frequently of use in making repairs or doing work in which good, strong insulating material is needed.

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In the RETAIL WORLD

G. T. Bradford of Rock Island, Ia., has become a dealer; he has the Rambler account.

A one-story garage, 40 x 100 feet, is to be built in East Orange, N. J., by Samuel Katz; the plans call for an expenditure of $6,000.

Harry Lipp is having plans drawn for a brick garage which he will erect on Bedford Park boulevard, New York City; he estimates the cost at $15,000.

George Crawford of Hagerstown, Md., and D. J. Forney of Gettysburg, Pa., have had plans drawn for a garage which they will erect in the latter town.

Permission has been granted to R. J. Dougherty, of Pittsburgh, Pa., to build a one-story garage and showroom on Grant boulevard; it will cost $6,000.

D. S. Parker and S. J. Culver have entered the selling field in Pomeroy, Ia., under the style Parker & Culver; they will sell Buick, Oakland and Krit cars.

Asire & Palmer, real estate agents in Marquette, Mich., have "gone into" automobiles; they have the Cadillac agency for Marquette and Alger counties.

The Public Garage, operated in Woodburn, Ore., by L. M. Remington, has been purchased by S. E. Brune & Son. The latter has the Michigan car agency.

Frank Kostlan of Marshalltown, Ia., has purchased the interests of his partner, J. C. Karkosh, in the Kostlan Auto Co. Kostlan will continue the business alone.

W. M. Chellis, Maine representative of the Franklin Automobile Co., has purchased a garage at 684 Congress street, Portland; a Franklin service station will be opened.

Mohr Bros., of Milwaukee, Wis., have had plans drawn for a garage, 60 x 102 feet, which will be erected at 32d street and North avenue; the estimated cost is $20,000.

Henry Alsopp, of Newark, N. J., is preparing to erect new brick showrooms and a garage, 116 x 84 feet, at Hudson street and Central avenue; he will expend $25,000.

A. B. Longacre has secured a site at Grant Boulevard and North Craig street, Pittsburgh, Pa., and will erect a garage, salesrooms and repair shop; the estimated cost is $10,000.

A six-story garage is to be erected on West End avenue, New York City, between 63d and 64th streets, by A. D. Russell of Princeton, N. J. It will represent an expenditure of $250,000.

J. C. Lewis, formerly in the automobile business with T. A. Bryson in Savannah, Ga., has branched out for himself; he has secured the Ford and Cole agencies and will handle accessories also.

Seccombe & Williams is the style of a new firm in Houghton, Mich., which is located at Shelden and Franklin streets. It will operate a garage and handle the Haynes, Locomobile and I. H. C. lines.

W. P. Kastner, accessory and tire dealer in Chicago, has leased for ten years a site at 2112 South Michigan avenue and will erect a building for his business; the site rental and new building involve $60,000.

The Ottawa (Ill.) Garage Co. has bought out the Clifton Garage. Ray Whittaker and Kirk Wyatt, who went to Ottawa from La Salle, Ill., last spring to open the garage, will locate a similar business in Chicago.

Permission has been granted to Thomas J. Northway, the Ford dealer in Rochester, N. Y., to build a three-story brick garage and salesrooms on Exchange street, north of his present location; it will cost $12,000.

Walter H. Koebel, formerly of Decatur, Ind., has entered the selling field in Indianapolis; he has the agency in that city for Cutting and Detroiter cars. Temporarily he will be located at 30 North Illinois street.

Automobile & Garage Co. is the style of a new enterprise formed in Yoakum, Tex., with $20,000 capital; the officers are: President, A. J. Ross; vice-president, F. S. Mason; treasurer, J. Lyons; secretary, D. J. Shall.

Co-operative Auto Co. is the style of a business just established by S. W. Wicks at 199 West 5th street, St. Paul, Minn. Garage, storage and repair work will constitute the present business; later an agency will be secured.

Harry Scott, formerly a chauffeur, has purchased the repair department of the Reid Auto Co. of Kalamazoo, Mich. Daniel Reid, the proprietor of the automobile company, will continue to sell Buicks and Oldsmobiles.

The Kentucky Automobile Co., of Louisville, state distributer of Cadillac cars, has contracted for a new service station and salesrooms in Lexington, in the same state. The new building, which will be completed about January 1, will be at Spring and Main streets.

Seward G. Andrews, for the past three years manager of the Detroit branch of the Swinehart Tire & Rubber Co., has resigned and will open a garage in Saginaw, Mich., under the style Andrews Auto Co. He will handle the Studebaker line.

S. R. Ide and Fred A. Watson, under the style Ide & Watson, have taken over the garage end of the Robert Willey Auto Co.'s business, at Charles avenue and Wealthy street, Grand Rapids, Mich. The Willey company will continue to handle Winton, R. C. H., Crow and Hupp-Yeats cars.

Thornton Chesleyn, an insurance man, and Fred L. Harvetcutter, for the past year manager of the Meeley tire store in Washington, D. C., have purchased the Washington branch of the Kelly-Springfield Tire Co., at 1730 14th street, northwest. They will continue the business in that location.

The Eller Motor Car Co. and the Halff Co., of Dallas, Tex., have combined; the former handled Pierce-Arrow cars, the latter Chalmers, Paige-Detroit and Flanders electrics. R. C. Eller, proprietor of the company which bore his name, will manage Pierce-Arrow sales for the Halff Co., which name the new business will bear.

The Northwestern Cole Motor Co., with H. P. Wood as president, has been organized in Minneapolis, Minn., as northwestern distributer of Cole cars; it succeeds the Haynes-Knutson Auto Co., which has given up business because of the ill health of John Knutson. The Haynes-Knutson location, 216 South 6th street, is retained.

The St. Louis Lozier Co., which, as its name indicates, will handle the Lozier line in St. Louis, Mo., has been formed with a capital of $25,000; its head is Henry B. Graham, who is president of the Graham Paper Co. and who was president of the now inactive Bagnell Automobile Co. Graham has associated with him as vice-president and general manager Nelson S. Gotshall, a Lozier factory man. The location is that formerly utilized by the Bagnell company, Graham, when Bagnel died recently, having bought up all outstanding interests in this concern.

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ILLUMINATING THE ELECTRIC LIGHTING SYSTEM

In Which Two More Installations Are Dissected, Their Characteristics Made Plain and Their Operation Explained—Wherein the Dealer Can Benefit Both the Owner and Manufacturer.

(This is the fifth of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render easier their care and repair by dealer and owner alike.)

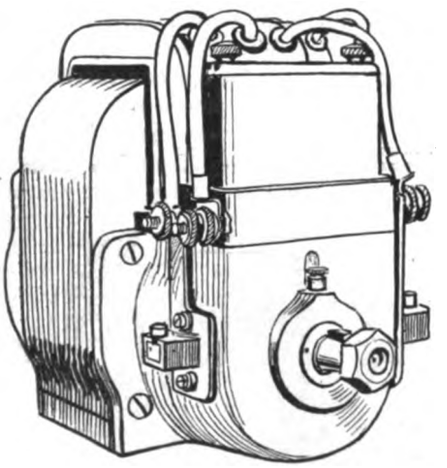
It is a fact peculiar to most businesses that the purchaser of an article almost invariably "looks up" to the dealer through which he purchased it to be set in the right path in the event that trouble of any kind develops. It may be that the manufacturer of the device, or apparatus, or whatever it may be, is more convenient to the purchaser than is the dealer, but even in that case it is a psychological fact that the purchaser prefers to do business with the dealer—provided he has been fairly treated in previous transactions, of course. As a rule, the dealer can get closer to his customers than can the manufacturer; he acts as a sort of buffer between the two and often can, by the exercise of his conciliatory powers, adjust slight difficulties or strained situations in a manner that makes friends for himself and also for the manufacturer.

How Knowledge Helps the Dealer.

So it is that the purchaser "looks up" to the dealer; the dealer has made a friend of him. And when the purchaser of a particular manufacturer's goods experiences some slight trouble, that may be the fault of any one of the three parties, his first recourse ought to be, and generally is, to the dealer who acted as the intermediary. But it is only when the dealer is well posted and knows his line from A to Z, that he can render the service which will make him friends and prove of mutual advantage. If he can tell his customer quickly and concisely just what is the trouble and can remedy it for him with the least loss of time and at the least expense, how much more friendly will be the feelings engendered in the breast of the customer! If, on the other hand, the dealer cannot make the required adjustment or repair for the simple reason that he is not completely familiar with the apparatus, or makes but a poor attempt which later develops to be seen in its true light, the situation which may have been strained before is in a fair way to deteriorate into a complete rupture.

Necessity for Proper Education.

All of which makes very plain the necessity for dealers to educate themselves into a thorough knowledge of their wares. And in this respect there are few subjects that are susceptible of greater study on the part of the dealer and which will return greater rewards in proportion to the amount of study given them, than the study of electric lighting and engine starting systems. Already several of them have been explained and their care and repair treated of in the four preceding articles that have appeared in Motor World. Several are treated in this article, and others will be treated in succeeding articles, and in each of them an effort has been made, or will be made, to place in the hands of the dealer and the owner such information regarding the different systems as will enable either to view them intelligently and such a way as will emphasize their real simplicity and the generally unknown ease with which adjustments and such minor repairs as become necessary can be made.



REMY LIGHTING GENERATOR

Compact Low Tension Generator.

Supplementing the ingenious and thoroughly practical Remy combination magneto-lighting generator that was described and illustrated in the last issue of Motor World, the Remy Electric Co. of Anderson, Ind., has just brought out a new lighting dynamo of the straight low tension type designed to be used for lighting alone, though, as has been explained in previous articles, it is perfectly feasible to employ any low tension generator for ignition purposes in conjunction with suitable induction coils and a distributor.

Laudable Reduction of Complexity.

In the new generator, a palpable effort has been made to reduce to the minimum all complexity, and to this end the mechanical output regulator which forms part of the Remy magneto-dynamo equipment has been eliminated; its place is taken by purely electrical regulation, the principle of which long has been known and applied in various current generating machines with a great degree of success. The Remy system is designed to operate at 12 volts and the dynamo is differentially compound wound; it is positively driven, without the interposition of any clutching devices, at crankshaft speed. The armature, which is illustrated herewith, is of the slotted drum type and is wound with cotton covered enamel wire and afterward impregnated with Bakelite, which is an insulating compound which solidifies when cold—it is applied hot—and renders the winding practically solid and almost impossible of destruction under ordinary, or even extraordinary, conditions. By way of ensuring smoothness in operation and quietness, the armature slots are skewed or given a slight twist; the armature shaft turns in large ball bearings.

Little to Get Out of Order.

In the field, as in the commutator proper, there is little, if anything, that can possibly get out of order or adjustment and cause trouble, for there are no moving parts and everything is thoroughly protected. The field is of the two-pole type and is a steel casting to which the end plates and base are rigidly attached. The compound winding is located in a protective covering on the upper part of the field. By reason of the fact that the commutator is the portion which nominally requires the greatest attention, which at best amounts merely to casual inspection and occasional cleaning, the generator has been so designed that, regardless of its position, access to this part always is easy, and though it is thoroughly protected, no tools are necessary in getting at it.

There is no opening in the end plate at the commutator end; or, rather, there is an

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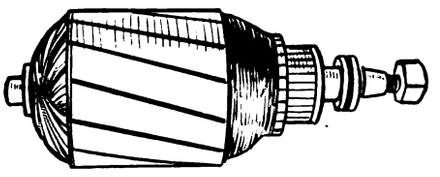
opening, but it is closed in an ingenious manner by locating the automatic cut-out—or, as it is styled in Remy parlance, the reverse current relay—over it. This reverse current relay is held in place by means of two wing nuts, the removal of which releases the device, uncovering the commutator inspection hole, and making possible cleaning or adjustment. Theoretically, commutators never should require to be touched; they should run indefinitely without attention until they become so worn that their replacement is necessary. In practice, however, attention is necessary, principally because of improper lubrication. Over-lubrication results in a gummy, sticky substance accumulating on the segments and poor commutation results. Under-lubrication, on the other hand, results in cutting of the segments, in which case excessive sparking occurs and cauess rapid deterioration of the brushes and the commutator.

Brownish Glaze is Necessary.

To be in the best of condition, a commutator should exhibit a glazed, brownish appearance and run without sparking. In order to obtain this condition, it is well occasionally to apply a minute quantity of the best quality vaseline of a small piece of felt, pressing the felt on the commutator while the armature is rotating. Only a very small quantity should be applied, however, and then only when the commutator appears very dry and exhibits symptoms of scratching or sparking. Oil should never be used, and great care should be taken to see that the bearing at the commutator end is neither flooded nor starved. If deep scratches develop, they may be removed by applying fine sandpaper while the commutator is running, or, in drastic cases, the armature may be removed, placed in a lathe and the commutator turned down an infinitesimal part of an inch.

Caring for the Brushes.

The brushes, of course, also will require occasional attention, and at periodic intervals should be removed and thoroughly cleaned of dust and oil deposits. Naturally, the brushes wear away slightly, and unless the dust which results is cleaned away it will get into the vitals of the machine and may cause trouble with the insulation. In not a few factories there is a growing tendency toward the use of graphite compound brushes, which are chosen by reason of their self-lubricating qualities. But while they are excellent devices when used advisedly and after provision has been made for their use by the manufacturer of the machine, they should not be substituted for carbon or copper mesh brushes except upon authority from the dynamo manufacturer. There are conditions under which they will not operate to the best advantage, and there is no one more able to dictate the particular kind of brushes than the manufacturer of the dynamo. In the Remy instrument the brushes are held in place by means of a couple of screws, though the construction is unusual in that the brushes may be removed merely by loosening the screws, which need not be taken out entirely, a feature which is advantageous where room is

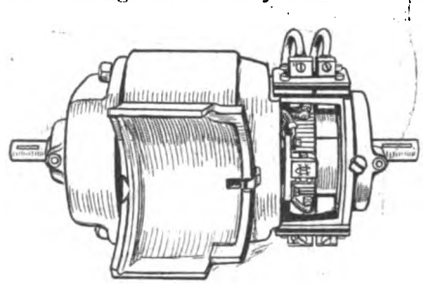


REMY SKEWED ARMATURE

cramped. The brushes are made of carbon and should be replaced from time to time as they wear down through use.

Parts that Require Attention.

The only other portion of the Remy instrument which will require attention is the reverse current relay, which, as has been pointed out, is located in a casing over the commutator inspection hole. The function of this device is to connect the dynamo to the battery when the dynamo current is the stronger and to disconnect it when the battery current is the stronger. In form, it consists of an electro-magnet with two separate windings and a relay blade for mak-



HOLTZER-CABOT DYNAMO

ing the contact. In operation, the relay blade is pulled down and connection made between the dynamo and the battery when the current from the dynamo becomes greater than the current from the battery. The dynamo then charges the battery as long as the dynamo armature speed is greater than 250 revolutions a minute. Immediately the speed drops below this point the current from the battery "backs up" through the relay, and in doing so causes the two windings to oppose each other, the result being that the contact blades drop, under the action of a spring, and the connection is broken.

Although this relay operates on an old and tried principle, and seldom, if ever, requires adjustment, it is well occasionally to inspect it and make sure that it is operating properly. The contacts in the relay blade should be kept clean and bright and about once in every six or eight months a single drop of very fine oil (preferably watch or typewriter oil) may be placed on the moving parts other than the contacts. Needless to say, no oil ever should be placed on the contacts. In the event of trouble the worst that could happen would be the sticking of the contact surfaces, due to dirty surfaces. Or the spring might through some unaccountable fault become broken, in which case connection between the battery and the dynamo would not be broken when the speed of the latter dropped below 250 revolutions per minute. In such an event, no harm could come to the system, owing to the fact that it is thoroughly protected by means of fuses.

How to Hunt for Trouble.

In the event of failure to generate, the fuses invariably should be examined first, for they are incorporated in the system for the specific purpose of indicating trouble and protecting the mechanism. Spare fuses are part of the equipment, and "blown out" ones should be replaced, though not until a thorough examination has been made to discover the cause of the failure. Generally, the location of the fuse that "blows" can be taken as an indication of the location and kind of trouble. If, after the fuse has been replaced, the dynamo still refuses to generate, all connections should be gone over carefully in search for broken wires or loosened binding screws, and as a last resort the brushes and commutator should be examined to make sure that the brushes make good contact and that their respective wires have not jarred loose. If all these things are right and proper and the dynamo still refuses to generate, that fact may be taken as an indication that the repair job is not one for the amateur, in which case a specialist, preferably a representative of the manufacturer should be called in.

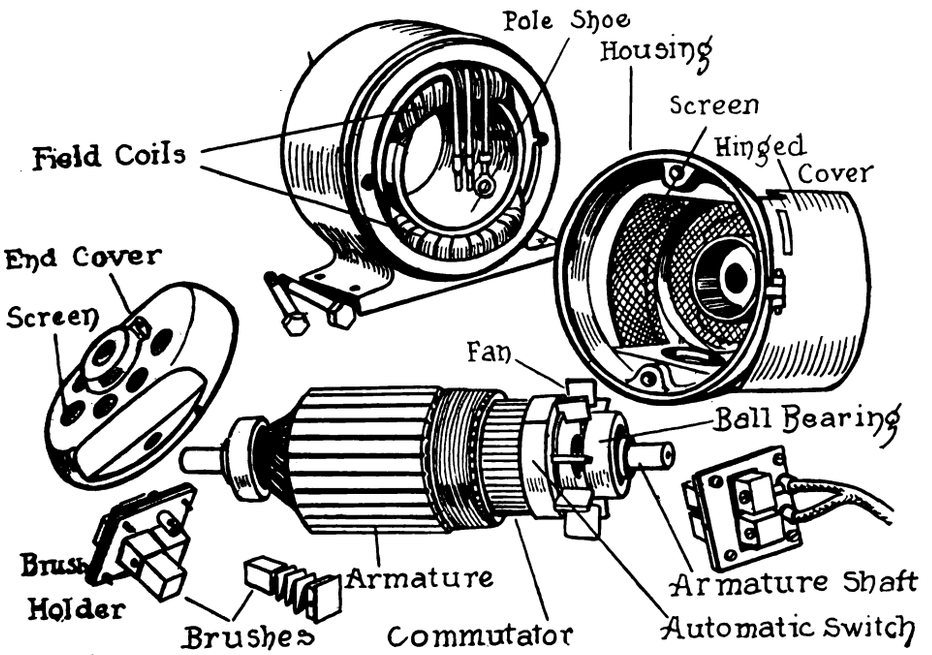
Value of Clear Illustrations.

For a proper understanding of almost any piece of mechanism, it is advisable that, where possible, its component parts be examined in detail, for which reason the dynamo, which forms the heart of the Holtzer-Cabot electric lighting system, manufactured by the Holtzer-Cabot Electric Co. of Boston, Mass., is shown herewith, both completely disassembled and fully assembled. Incidentally, such illustrations, particularly in the case of electric lighting systems, make doubly plain the real simplicity of such mechanism and thus are valuable in dissipating the popular though erroneous idea that all, or nearly all, such systems are the incarnation of complexity and are not readily understandable.

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When Compactness is Misleading.

In the illustrations of the Holtzer-Cabot dynamo are shown a simple, shunt-wound self-regulating generator, in which the compactness of the parts and their incorporation within a comparatively small and tight case might perhaps lead to the supposition of considerably greater complication than actually exists. That the machine is in reality simple, as are practically all other such machines, however, is revealed by the detail sketches of the parts. The field is composed of laminated iron and the windings are disposed in such a manner as to make them practically indestructible under ordinary conditions. The armature is comparatively heavy and is mountetd on a liberal sized shaft carried in ball bearings. At the commutator end of the shaft is mounted a simple and positive centrifugal cut-out switch for disconnecting the dynamo and the battery when the speed of the former drops below a predetermined limit, and a small fan, the purpose of which is to ensure that the temperature of the dynamo does not rise to dangerous limits.



HOLTZER-CABOT DYNAMO DISASSEMBLED SHOWING COMPONENT PARTS

Absence of Complicated Winding.

Indicative of the simplicity of the whole mechanism, there are no special windings or complicated regulating devices of any kind, current and voltage regulation being dependent entirely upon a fundamental electrical principle. Excessive current generation at high speed is obviated by extending the pole shoe tips in a distinctive manner, the result being that current is controlled by self-induction. Incidentally, this form of pole shoe also ensures high efficiency at low armature speeds.

With this dynamo, as with so many others in which regulation of output is a function of the generator itself, there are very few parts that are at all likely to get out of order or even to require attention. The commutator will require inspection from time to time, for which purpose the hinged cover on the top may be lifted, disclosing the brushes and brush holders, the centrifugal switch and the fan and the mechanism holding the brushes.

Dissassembly Made Easy.

If necessary, the brush rigging can be easily removed, permitting the withdrawal of the armature without the necessity for disturbing the connections. Needless to add, the armature should not be taken out except in the case of dire necessity, for though it is a simple matter to replace it and obtain proper adjustment, it is the wiser plan to "let well enough alone," secure in the knowledge that proper assembly has been made by the manufacturer and that it will stay proper under normal conditions as long as it is undisturbed.

The brushes are unusually liberal in size and should not require replacement for long periods. When they do require renewing their adjustment is simple, as is indicated by the accompanying sketch. Commutator care as made plain by the instruction given for other machines applies also in the case of the Holtzer-Cabot, though it can serve a good end rather than a bad one to reiterate the necessity for proper lubrication—not too much and not too little.

Duties of the Screen.

Another point which should be examined from time to time is the screen which partly closes the ends. Its purpose is to provide a means whereby air may be permitted to circulate through the machine without carrying dust and dirt with it. But if no air can get in, owing to the screen being clogged, it may be expected that the temperature of the dynamo will rise higher than was supposed by the manufacturer. From which it appears that the screen should be cleaned from time to time with the aid of a small brush with comparatively stiff bristles. Care should be taken, however, to see that accumulation of carbon dust from the brushes, and ordinary road dust, are brushed out of the machine and not into it.

Care of Automatic Switch.

The only other point which should receive periodic inspection is the automatic centrifugal switch located at the commutator end of the armature shaft. The duty of the switch, as already outlined, is to connect and disconnect the dynamo and the battery at a predetermined low armature speed in order to prevent the battery discharging itself through the dynamo when the engine is idle or running at very low speed; the Holtzer-Cabot dynamo is designed to operate at 1½ times crankshaft speed. As the switch is completely enclosed and cannot be gotten at short of disassembling the dynamo, which fact may be taken as an indication of its efficacy and the little attention it requires, it will be sufficient to make sure occasionally that it is performing its functions properly.

Tracing Generator Failure.

This may be determined easily by lighting several of the lamps and then stopping the engine. If the switch is operating properly there will be no dimming of the lamps, for they will be automatically thrown onto the storage battery. If, however, the switch should fail to operate, stoppage of the engine would occasion a dimming of the lamps, for part of the current then would pass back through the generator unless an interposed fuse burned out. In the latter case the dynamo then would fail to deliver current to the battery, which fact would be made plain by failure of the meter to register, if one were provided. If no meter were provided and other means had to be relied upon as an indication of trouble, the battery gradually would become exhausted and in this way make known the broken circuit.

Importance of Driving Gear.

Throughout the present series of articles dealing with the care and repair of electric lighting and engine starting systems, nothing has as yet been said regarding the method of driving the generator, though the subject manifestly is one to which great

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importance attaches. Generally, dynamos are driven through the intermediary of some form of gearing, either a belt or a chain or a train of gear wheels. The tendenscy, however, is toward direct drives and the elimination of all belts, chains, etc. Where a belt is employed, the V section undoubtedly is the best and is the one that is most generally used; flat belts, with the inevitable slippage that follows slight looseness, rarely are found in service of this character.

Silent Chains Should Not Run Dry.

Where chains are used, they are almost invariably of the "silent" variety, and mistakes often are made in assuming that this particular type of chain requires less lubrication than does the type long since made popular as a means to the propulsion of bicycles. But such is not the case, and the "silent" chain requires just as thorough lubrication as any other kind of chain used for transmission purposes. Lubrication of any kind never should be applied to belts, of course, though an occasional application of belt dressing, prepared for the purpose and obtainable of any belting house, will assist in preserving the leather and reducing the tendency to slippage.

Graphite Grease for Chains and Gears.

In applying lubricant to chains, care should be taken that sufficient is used, though an over supply will be thrown off by centrifugal force and will collect or cause accumulations of dust and dirt. The better way is to mix fairly thin grease and flake graphite to the consistency of a mediumly heavy paste and apply it sparingly to the inside of the chain teeth. Such lubricant will retain its lubricating qualities for long periods and will not be thrown off by chain whipping or centrifugal force. Where a train of gear wheels is employed to drive the dynamo the same lubricant advantageously may be used unless, as generally is the case, the gear wheels are enclosed in the crankcase, when the usual timing gear grease or the lubrication system of the engine will care for their needs.

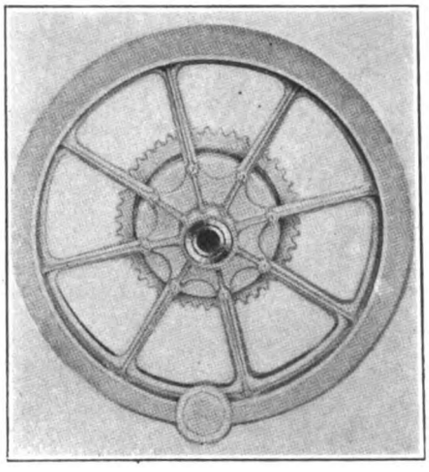
Stitch In Time That Saves Repairs.

In nearly every case, the amount of adjustment or repairing required by the modern electrical lighting system is proportional to the amount of care given it, barring, of course, the unavoidable deterioration due to natural wear. But in those systems that already have been made plain, and in those that still are to be made plain, for it scarcely is possible to treat of all in the same article, the situation automatically resolves itself into a practical vindication of the old saw anent the efficacy of a single stitch taken in time.

SHELDON DEVELOPS STEEL WHEELS FOR COMMERCIALS

They Are of One-Piece Design and Can Be Bent and Straightened Without Harm—Stronger and Lighter Than Wood.

With the increased efficiency and reliability of power plants and transmission mechanism it is possible to keep motor trucks on the road a much greater proportion of the time than was the case some years ago; and at the same time load-carrying ability has gone up very considerably. These conditions have, of course, imposed correspondingly severe stresses on the road wheels, and only by the exercise of great care in the selection of material and the employment of improved manufacturing methods have wood wheels been kept abreast of the requirements of heavy haulage.



SHELDON STEEL REAR WHEEL

Steel wheels, which have been more or less extensively used for several years by truck manufacturers, are considered by some engineers as the solution of the heavy wheel problem, and among the concerns that have given the subject close attention is the Sheldon Axle Co., of Wilkes-Barre, Pa., widely known for its motor car axles, springs and other productions, which just has brought out a line of steel wheels, the general appearance of which is well shown in the accompanying illustrations. The absence of bolts and other fastenings is a prominent feature.

The wheel proper is of a single piece of steel, with the hub bored to receive the bearings and the rim turned to receive the tire band. By virtue of the annealing process which forms an important step in the manufacturing system, these wheels, after being so badly bent as to render them useless, can be straightened and put into good condition; the pressure required for such bending, however, is said to be much greater than a wood wheel of similar rated capacity is capable of withstanding without total collapse.

The great strength of the steel wheel is due, in large measure, to the fact that the metal can be distributed to the best advantage for the resistance of stresses, without the use of surplus material. Light ribs are formed along the spokes to withstand lateral stresses, and, as in practically all modern structures, there is considerable thickness of metal only in the directions of stresses. This, together with the absence of joints and fastenings, results in unexpectedly light construction. For instance, a set of steel wheels, 34 inches front and 38 inches rear diameter, with 4 inch solid tires, weighs 28 pounds less than a set of 36-inch wood wheels with tires of similar size.

Notwithstanding its great resistance to deformity, great resiliency is claimed for the properly made steel wheel, and as a result thereof, tire life is said to be augmented to an extent that expresses itself in dollars and cents.

How to Prevent Gas Tank Slipping.

Of the very many "little things" on a car that can become disarranged, with consequent annoyance to the driver, none is more aggravating than an acetylene gas tank which has worked loose in the holder and turned around, with a consequent presence of moisture in the gas line. While the liquid does no more serious harm than to prevent the lighting of the lamps until the pipes have been drained, the annoyance could be spared if lock nuts or lock washers were applied beneath the wing nuts on the retaining straps.

Split Nut for Protecting Threads.

A bolt or other threaded part that requires to be gripped in a vise, but cannot be held without danger of marring the threads, can be clamped as firmly as may be desired by sawing through one side of a nut of the proper size, screwing the nut on the bolt and clamping the nut in the vise, with the split either on top or underneath. The split will allow the nut to close on the threads and hold firmly without doing any harm. Even the use of soft metal clamps is inferior to this method.

Empty Cans as Hub Cap Substitutes.

A small empty tin can, wired on, is a curious sort of substitute that has been used for a lost hub-cap; but it is a substitute that has been used and certainly is better than nothing, to protect the bearings from dust and mud.

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FRAMES AS A FERTILE FIELD FOR IMPROVEMENT

Wherein the "Designing Engineer" Suggests Some Not Wholly New Though Undeveloped Ideas That Might be Put in Practice—Motors Suspended on Springs and Foreshortened Chassis Discussed.

It was getting along toward six o'clock on Monday afternoon, and things were very quiet in the designing engineer's office. The last of the draughtsmen to cover up his board was washing the pencil grime off his hands, and the designing engineer was trying to make up his mind whether to put on his hat and go home or stay and do a little extra work in the quiet of the evening. Somehow the D. E. believed that electric light and silence were conducive to clear thought, and he had a habit of putting his beliefs into practice.

Draftsman Does Some Thinking.

He was still undecidedly twiddling with his papers when Kiefer, the draughtsman, presented himself before the desk with an expression on his face that, to quote the D. E., was "the shape of a question mark." Carrying out the dumb show, the D. E. looked up with an expression that said as plainly as words, "Well, go ahead with your question," which Kiefer proceeded to do without delay.

"I've just been doing a little wondering," he said, "and now I wonder if you ever wondered the same thing."

"Give it up," retorted the D. E. "Let's have the harrowing details."

Do Cars Possess Too Much Framework.

"Well, it may sound foolish, but I have just been wondering why a car needs so much framework. It seems to me there's a good deal more than is really necessary, and there ought to be some way of getting rid of some of it."

"That's not so foolish," replied the D. E. "Other people have wondered the same thing."

"I was just sort of looking over that car out there with the body raised half off the chassis," pursued Kiefer, "and it seemed to me that the whole machine is a collection of frames of one sort and another. First, there's the main frame of the chassis. Then there's a sub-frame for the engine, and the rear axle is in a sort of frame of its own, and it's connected to the main frame by rods that come pretty near forming another frame. On top of it all the body has a separate frame too. Now I may be talking impracticable rot, but I can't help thinking that there ought to be some way of combining some of this bunch of trestle-work which would make the car lighter and cheaper, and maybe stronger, too."

Bigotry Often Stifles Ingenuity.

"Not a bad idea at all," said the D. E. "You're not the first man to think of it, though. I never delved into it very deeply, but I have run across odd bits of information and suggestions and designs in the trade papers at different times, and I have an idea of my own that a good deal could be done to improve the conventional type of car by changing the frame arrangements."

"As long as we're both interested in the same idea, go ahead and open your heart. I won't tell the board of directors."

The D. E. laughed, for it was a standing joke that the "powers" of the company were intensely jealous of the design of their car, and were inclined to resent suggestions from anyone who could not add a string of initials to the end of his signature. More than one well-meant criticism had gone down the wrong way, and everyone who was "in the know" thought at least twice before intimating that such a thing as an improvement in the car was possible.

Radical Ideas Might Be Tried.

"You're sworn to secrecy" he said. "Well, in the first place, if I were free to experiment with radical designs I would see if I couldn't work out a machine with the body frame made of steel, strong enough so that a chassis frame would not be required at all. This might be done by making the sills of channel steel, perhaps, and they would not need to be so very heavy, because the rest of the body could be stiffened and strengthened to add to the strength of the whole."

"That's about the way it occurred to me, though in a hazy sort of way," put in Kiefer. "But when I listen to you I can think of things that didn't occur when I was listening to myself."

"What, for instance?"

Would Mount the Motor On Springs.

"What'll you do with your engine and gearcase? Hang them on the body direct?"

"No, sir. I would make use of quite an ancient scheme. Make the torsion tube that encases the propeller shaft very big and strong, and run it up to meet the gearcase, which would be the rear end of the unit power plant. This would give you the whole power plant and the driving mechanism in a single rigid unit from one end to the other, and there wouldn't be any universal joints or telescoping joints or anything of the sort. Then I would suspend the engine in the usual place, under the hood, putting it on a set of springs of its own, so that motor vibrations would not be transmitted direct, but would have to pass through the springs first. Goodness knows, a decent engine these days doesn't shake up a car very much, and with those extra springs the thing ought to run like velvet."

Solution Lies in Driving Connection.

"How would you make the driving connection between your big power unit and your body? There's no frame—I don't see just how you'd do it."

"You're a nice fellow! Here I'm working overtime enlarging on your foggy notions, and you're sitting there picking holes in my work. Well, I haven't exactly decided. There are several ways it could be done. I might make the connection at the front end of the engine, through auxiliary springs, or I might drive through radius rods from the rear axle to the body or, again, I might drive through the rear springs. I'm inclined to think, though, that the radius rod arrangement would be the best; it seems to me it would hold things in line better than any other method. I haven't really gone into the details in my own mind, and, so far as that goes, I would rather do a little experimenting first and make suggestions afterwards. It's the safest way. But I think there's a whole lot that really is sound and practical in the general idea."

"It's a wonder someone has not done it already," remarked Kiefer.

Ideas Appear New But Are Ancient.

"Someone has done at least part of it. A good many years ago there was a car that embodied the unit power and driving mechanism just about as I have described it, and the machine certainly seemed to be

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all right. But for some reason the car did not make a mark on the market, and simply dropped out of sight. But have you ever noticed that every once in a while some concern brings out an idea that was abandoned years ago, and makes a success of it despite that fact? I suppose it's because engineering ability at first was not equal to the task of bringing out the best, so that it was not a commercial success, despite the fact that the principle may have been entirely correct.

"As our old professor of chemistry used to say when he didn't get the results he expected after a lot of preparation for a demonstration, 'The experiment fails—yes, yes; but the principle remains the same.' Someone may have failed to make the idea work years ago, but that's no reason why it shouldn't work—and by that I mean in a manner that will be satisfactory from a commercial point of view—now that it is possible to do such magnificent mechanical work and that the problems of motor car construction are so much better comprehended than they used to be.

Narrower Motor's Effect on Body Design.

"There's another thing that I have 'wondered about,' as you are pleased to put it," pursued the D. E. "A motor isn't a very wide piece of machinery, and if necessary it could be made still narrower. It seems to me that if the engine were made narrower on top and brought back into a narrow little hood, extending through the dashboard, the whole body could be moved forward on the wheels so that the tonneau, which is the most uncomfortable part of the car, so far as riding qualities are concerned, would be well ahead of the rear wheels and would be somewhere near as comfortable as the front seat. The total length of the car would not be increased, and the space taken up by the motor would be between the feet of the occupants of the front seats; I don't mean that the hood should reach clear back to the front seat. With a low, narrow topped motor and a fairly wide body, I don't see why that shouldn't work out pretty well. For another thing, the driver could easily cast his eye on his motor while running by lifting the cover over it."

Plagiarism Sometimes Has Its Merits.

"How much of all this is new?" asked Kiefer.

"None of it. That is, the ideas all have been either put into practical shape or else have been suggested and talked over so all I can claim is that I never heard of a car that combined them—though for all I know there may be such a machine. And I'd like to bet you about thirteen cents that it's a good car, if it exists."

"I won't take you up on that, but," reaching for his hat, "I have very often observed——"

"Have you?" interrupted the D. E., doing likewise. "Well, let's go out now and take an observation. I feel the need of it."

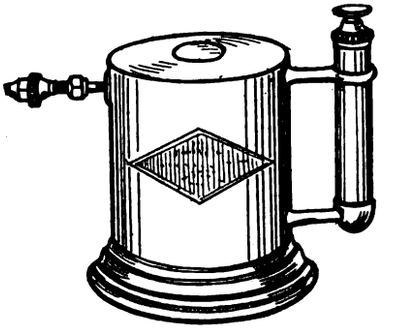
Brass Drifts for Ball Bearings.

Brass being softer than steel, its use as a drift cannot be overestimated. Despite the fact, it is not an uncommon occurrence to see a man "paying" a ball bearing with a steel punch the tip of which has been tempered. Of necessity, ball bearings must be a tight fit, and it is often imperative to drive them off the shaft or out of their housing. In doing so, however, great care must be exercised to deliver the blows alternately first at one point and next at the diametrically opposite spot, in order to dislodge the bearing equally and prevent cramping. The outer and inner races of ball bearings are very hard and rather brittle; therefore, unless a soft metal is used as a drift, cracked raceways may result. The tip of the drift should be cleaned from time to time, as the peining effect causes a spreading of the metal and will result in small particles of brass flying off, and these may find their way into the bearing with attendant damage.

Facilitates the Cleaning of Motors.

Cleaning the exterior of a motor is a job that no repairman particularly fancies; it is troublesome and time-taking, if done in the ordinary way, and at best it is difficult to get all nooks and crannies thoroughly cleared of the oil and dirt they are so capable of accumulating. It is to overcome this trouble that the Turner Brass Works, of Sycamore, Ill., has brought out the Turner motor washer, a device that bears a strong resemblance to the familiar gasolene blow-torch and works on the same principle, though no flame or fire is used as a matter of course.

The accompanying illustration shows the form of the "washer." The tank, which contains a quart of gasolene, is of solid drawn brass with the bottom brazed in; a small but effective air pump forms a handle, and on the opposite side is a nozzle, which can be adjusted to throw either a spray or a very fine, penetrating stream. In use the cleaner is partly filled with gasolene and air pressure pumped up; the spray or jet from the nozzle is directed against



TURNER MOTOR CLEANER

the motor to be washed, and, of course, can be projected into the smallest crannies. The combination of the oil-cutting action of the liquid with its forcible projection does the work quickly and effectively, and a quart of gasolene is said to be sufficient to clean an ordinary motor.

It should be borne in mind that in using an apparatus of this character the proper place to work is outdoors, so that the inflammable vapor will dissipate harmlessly, and also to avoid the inquisitiveness of the ubiquitous insurance inspector.

Rope and Jack to Remove Wheels.

In case a wheel has to be removed on the road or when a puller of suitable size is not handy, an ordinary screw jack and a piece of rope or a length of chain will answer the purpose. The force that can be exerted by a screw jack is not often considered, but as the force is applied very gradually the tightest wheel may be removed if the hitching is correctly done and the final resistance overcome by a well directed blow with a hammer after a piece of wood has been interposed between the jack and the hammer head. This will dampen the blow and prevent any damage being done to the jack. If possible, a piece of hard wood should be used, so as not to minimize the blow too greatly.

Cleaning Terminals to Help Voltage.

While the subject of clean terminals for electrical connections is a very old one, it is of interest to know that tests made on a large electric truck showed that the thorough cleaning of connections which had been neglected for several months made a difference of about 6 volts at the meter with the battery half discharged. This is quite sufficient to make it well worth while to keep the contacts of an electric vehicle perfectly clean, and indicates that there is something more than mere theory behind the advice to do so.

Using a File on Sheet Metal.

There is only way sheet metal can be filed with comfort and effectiveness, and that is by moving the file along the edge instead of across it. In filing across a sheet, most of the energy applied goes to make a horrible noise. This does not apply to small pieces that can be held in a vise with the edge close to the jaws, so that the metal has no chance to vibrate.

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FIFTEEN ENTRANTS START IN CHICAGO RELIABILITY

Around Lake Michigan Tour Launched Despite Heavy Rains—But Six Clean Scores at End of Second Day.

Even had the annual fall reliability tour of the Chicago Motor Club, which left the Illinois city Monday morning last, 21st inst., led through instead of around Lake Michigan, the route could not have been much "wetter." For a heavy downpour which commenced on the eve of the start of the tour and continued unabated throughout the first day's run of 170 miles to Oshkosh, Wis., made the none-too-good roads appear as if the lake had overrun its boundaries and encroached on the surrounding country.

Despite the weather, and despite also the numerous reports which came from the towns along the northern border of the lake to the effect that cold weather even unto the freezing point prevailed, 15 contestants left the Windy City on the lake-circling tour. Mud and water, however, did not serve to deter the tourists, and all save one of the 15 checked in at the night control without having incurred penalty. The solitary sufferer was R. B. Gray, who drove a National equipped with spring wheels and who was delayed for hours at Milwaukee with a broken hub cap.

The second day's run carried the tourists as far as Escanaba, 176 miles from Oshkosh. Continued rain made the road conditions even worse, if such could be the case, than on the previous day. But six contenders reached the night control with clean slates, J. Hanson (Case), A. M. Robbins (Abbott-Detroit), J. Monckmeier (Staver), and B. Park (R. C. H.) in the touring car class, and J. A. Wicke (Moline) and F. G. Salisbury (Moline) in the roadster division. R. B. Gray (National) dropped out, as did M. Barry (R. C. H.) who was detained for hours with motor trouble. A. Monson received 161 black marks for road work and tardiness at the control, and John Brolley (Velie) and E. T. Knudson (Staver) received 2 and 8 demerits respectively for adjusting carburetters. R. E. Maypole and Claude Anderson, who piloted Stutz cars, did not check in at the night control.

Before the contenders return to Chicago on Sunday evening next, they will have completed a soul-trying circuit 1,069 miles in extent, embracing, besides Oshkosh and Escanaba as night controls, Newberry, Mackinaw City, Traverse City and Grand Rapids.

The contenders who left Chicago were: In the touring car class, John Brolley (Velie), J. Hanson (Case), E. D. Knudson (Satver), G. Monckmeier (Staver), Adolph Monson (Bergdoll), A. M. Robbins (Abbott-Detroit), B. Park (R. C. H.), R. B. Gray (National); in the roadster class, H. M. Luce (Velie), R. E. Maypole (Stutz), Tom Roney (Bergdoll), J. A. Wicke (Moline), F. G. Salisbury (Moline), Claude Anderson (Stutz), M. Barney (R. C. H.).

Drizzle Shortens Rockingham Meet.

A drizzling rain which commenced ere half of the program had been run off and rendered the track so slippery as to be dangerous, necessitated a cancellation of the remaining events which were to have been run on the Rockingham Park track, Salem, Mass., on Saturday last, 19th inst. As it was, but two or the automobile events which were sandwiched in between motorcycle contests were reached. They were a five mile amateur contest for cars with displacements of under 300 inches and a ten-mile contest for cars of the same size, and were won by C. Oliver Iselin, Jr. (Mercer), in 5:50, and Daniel Higgins (Studebaker 30) in 13:15, respectively. The summary:

Five miles, for cars with displacements of under 300 inches, amateur drivers—Won by C. Oliver Irelin, Jr. (Mercer); second, H. Cutting (Mercer); third, S. S. Bigelow (Buick). Time, 5:50.

Ten miles, for cars with displacements of under 300 inches—Won by Daniel Higgins (Studebaker 30); second, J. Pew (Penn); third, Compton Smith (Hudson). Time, 13:15.

Narbeth Meet Ends With Darkness.

Darkness, which so interfered with his driving that Harry Ringler (Mercer) went through the fence after completing 48 miles in a 50-mile event, cut short the racemeet which was run on Saturday last, 19th inst., on the Belmont track at Narbeth, Pa. The three numbers on the program which were completed went to G. Bergdoll (Bergdoll), who completed five miles in 5:49; Freitag (Mercer), who went a like distance in 5:04⅗, and Menker (Kline), who went 10 miles in 10:02⅗. The 50-mile event was called off after Ringler's mishap, through which, happily, he passed unscathed, with Blocksom (Stutz) in the leading position. The summary:

Five miles, match race—Won by G. Bergdoll (Bergdoll); second, S. C. Briscoe (Regal). Time, 5:49.

Five miles, match race—Won by Freitag (Mercer); second, H. Ringler (Kline). Time, 5:04⅗.

Ten miles, for cars with displacements of 301-450 inches—Won by J. Menker (Kline); second, Freitag (Mercer); third, Blocksum (Stutz). Time, 12:02⅗.

"LITTLE GLIDDEN" TOUR LITTLE IN REALITY, TOO

Only Five Cars in Line and Only One Clean Slate—And This Despite Good Weather and Good Roads Over Entire 570 Miles.

If a name really counts for anything, the title "Little Glidden," which attached to the reliability tour of the Iowa State Automobile Association, which started from Des Moines on Tuesday, October 15th, and finished at the same place on Saturday last, 19th inst., certainly was befitting. The "littleness" of the tour was evidenced by the fewness of the entrants, there being just five contenders, including the pilot, in line.

Of the five, R. O. Gresham, who piloted the Warren entry, made the best showing and was the only participant to finish with a clean slate, by virtue of which performance he took the cup for the best score in the touring car class. Vere Reynolds, in a Chalmers, who finished with two points against him for tardiness at a night control, and A. E. Gounan (Chalmers), who was delayed by a broken spring, which cost him 10 demerits, also were entered in the touring car class. But two were entered in the roadster class—Dr. R. W. Soper (Ford) and Bruce Malcolm (Paige-Detroit)—and as both finished with penalties amounting to two points, the prize winner has not as yet been announced.

The route, 570 miles in extent, led from Des Moines to Council Bluffs, 120 miles; from Council Bluffs to Sioux City, 100 miles; from Sioux City to Ft. Dodge, 120 miles; from Ft. Dodge to Cedar Rapids, 130 miles, and back to Des Moines—another century. Good weather, and roads which, although not at all times 100 per cent. smooth, were in very fair condition, are accountable for the few penalties which were incurred.

Rain Causes Postponement at Hartford.

A steady downpour, which rendered the track too slippery for the contenders to negotiate at high speed with safety, caused the postponement of the E. W. Powell meet, which was to have been run off on the Charter Oak Park track, Hartford, Conn., Saturday last, October 19. Weather permitting ,the race will be run on 26th inst.

The Automobile Club of Middletown has been formed in the Ohio town of that name. The officers are: President, J. M. Iseinger; vice-president, W. C. Crane; secretary, C. E. Seabald; treasurer, Gay Biers. The board of directors comprises D. E. Haunan, G. D. Lemmis, Howard Wilson.

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WISHART THE HONOR MAN AT BRIGHTON BEACH MEET

Mercer Pilot Takes Three Out of Eight Events on Well Managed Program—Not Even Dust Mars Sport.

Although disqualification, which resulted from the piston displacement of his Mercer being slightly greater than the limit of the class in which he was entered, robbed Spencer Wishart of one of his easily earned victories on the Brighton Beach track, Saturday last, 19th inst., his fast driving, which netted him two victories, was one of the features of the day.

Although the weather was threatening throughout the day and, indeed, several slight sprinklings did occur in the morning, the exceptionally interesting program which was advertised was sufficient to draw a good assemblage. And so well managed was the meet, and such good condition the track, that enthusiasm ran high among the more than 6,000 spectators, and the last announcement of the day carried the news of a similar meet to be run on Election Day, Tuesday, November 5th, under the same management—that of the Motor Dealers' Exhibit Co.

Wishart's victories included a five-mile event for cars with displacements of under 601 inches, the prize for which was the 20-Mule Team Borax trophy. Four started in the event—Mulford (Mason), Howard (Buick), Whalen (National) and Wishart (Mercer). Howard led off at a terrific pace, closely followed by Whalen. When coming around the bend into the home-stretch, Howard attempted to round the curve at too high speed and his mount skidded clear around and started in the opposite direction toward Whalen in the National. Whalen's adroitness saved the situation, however, and the National left the track and brought up in the field minus a rear shoe. Wishart took the lead, with Mulford in second place, and finished in 4:46.26. Both Whalen and Howard started again when the cars were put in condition, although the race practically was over.

Wishart's second victory brought him the Warner trophy. The contest was a free-for-all handicap, which went for ten miles with ten starters, and was one of the feature numbers on the eight-event program. The Mercer pilot had a 25-second handicap, but managed to lead home Ferguson (Mercer), who had 45 seconds, and Lewis (Stutz), who started from scratch. The time was 9:44.85.

Wishart also managed to beat the field in a Class C event for cars with displacements of 231-300 inches, but was disqualified, Ferguson being declared the winner. Ferguson's time was 9:41.87.

Dave Lewis (Stutz) likewise accounted for two events, a Class C ten-mile contest, for cars with displacements of 301-450 inches, which he completed in 9:32.50, takiny the Poertner trophy, and a five-mile free-for-all handicap, in which he started from scratch and won in 4:27.50 from a field of 12. Ferguson took, besides the Class C event which Wishart lost by disqualification, a five-mile invitation race, which he completed in 4:56.85.

The longest contest on the program went to Neil Whalen, who completed 25 miles in 24:52.85 and won the George Robertson trophy. Ferguson took second position in the contest and Lewis third. Six lined up for the start. Mort Roberts (Mason) won the Class C event for cars with displacements of 231-300 inches, completing the five miles in 5:18.55. An exhibition mile driven by Mulford in the National in 53.30 seconds and another by Bragg in a Fiat, but which was not timed, marked the close of the program. The summary:

Five miles, for cars with displacements of under 231 inches—Won by Mort Roberts (Mason); second, William Chandler (Studebaker 30); third, Ernest Meyer (Hupmobile). Time, 5:18.55.

Ten miles, for cars with displacements of 231-300 inches—Won by Armour Ferguson (Mercer); second, Gene Homan (Bergdoll); third, Mort Roberts (Mason). Time, 9:41.87.

Ten miles, for cars with displacements of 301-450 inches—Won by Dave Lewis (Stutz); second, P. G. Thebaud, Jr. (G. J. G.). Time, 9:32.50.

Five miles, for cars with displacements of under 601 inches—Won by Spencer Wishart (Mercer); second, Mort Roberts (Mason); third, Neil Whalen (National). Time, 4:46.25.

One mile, time trial—Ralph Mulford (National). Time, 53:30.

Twenty-five miles, free-for-all—Won by Neil Whalen (National); second, Armour Ferguson (Mercer); third, Dave Lewis (Stutz). Time, 24:52.85.

Five miles, special invitation—Won by Armour Ferguson (Mercer); second, Spencer Wishart (Mercer); third, L. Mitchell (Mercer). Time, 4:56.85.

Five miles, free-for-all handicap—Won by Dave Lewis (Stutz), scratch; second, Gene Homan (Bergdoll), 20 seconds; third, Neil Whalen (National), 2 seconds. Time, 4:27.50.

Ten miles, free-for-all handicap—Won by Spencer Wishart (Mercer), 25 seconds; second, Armour Ferguson (Mercer), 45 seconds; third, Dave Lewis (Stutz), scratch. Time, 9:44.85.

BAD WEATHER AND ROADS HANDICAP GLIDDEN'S TOUR

Trophy Donor Finds Not All Plain Sailing on Route of Abandoned A. A. A. Tour—One Outsider Fails to Share Glory.

For the first time since he left Detroit, on October 14th, Charles J. Glidden, who is endeavoring to follow the itinerary of the abandoned A. A. A. National Reliability tour, was forced to cut short his day's run and lay over at Clarksdale, Miss., on Tuesday, 22d inst., when he had hoped to reach Greenwood, 75 miles beyond. A combination of miserable roads and inclement weather was responsible for the delay. When he arrived at Clarksdale, Glidden, who is piloting a Maxwell car, had covered 1,095 miles since he left Detroit, having made night stops at Fort Wayne, Ind., Indianapolis, Louisville, Ky., Cave City, Ky., Nashville, Tenn., Sheffield, Ala., and Rogers Springs, Tenn.

Motorists along the route still are responding to the general invitation extended to "come out" and accompany the trophy donor from place to place, but Howard L. Waltrous, who left Cleveland in a Hupmobile two days after Glidden had started on his tour, and who overtook Glidden at Nashville on Saturday last, was not received with open arms. Waltrous did not conceal his purpose of gaining publicity for the Hupmobile, but was denied even the privilege of having his car "snapped" by the "official" photographer along with the other escorting cars, and was given to understand that there was only glory enough for one.

Three Share Honors at Evansville.

Three shared in the honors which attached to the combined automobile and motorcycle racemeet staged on the half mile track at Evansville, Ind., on Wednesday, October 16th, under the auspices of the Evansville Automobile Club. Kilpatrick (Hotchkiss), who took the five-mile free-for-all handicap in 6:56⅘, and Disbrow, who drove the Simplex to victory in an Australian pursuit which went for 3½ miles, won the two feature events. The other competitive number, a three-mile Class C event, went to Endicott in a Case, who completed the distance in 4:42, leading home two other contenders, Nikrent (Case) and Ulbrecht (Case). Disbrow also drove two exhibition miles, one in the reconstructed Fiat and the other in the Simplex, his times for the double circuits in the respective mounts being 1:18⅗ and 1:12 flat, which completed the program.

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1,017,407. Transmission Mechanism for Automobiles. Max H. Grabowsky, Detroit, Mich. Filed June 21, 1911. Serial No. 634,555.

1. In a transmission mechanism two portions of a shaft, an equalizing gearing having a ring uniting the portions of said shaft, said ring being provided with teeth, the inner end of one of said shaft portions being provided with teeth and means for moving said portion of said shaft longitudinally to engage and disengage said teeth for the purpose described.

1,017,498. Piston for Explosive Engines. John Bittner, Newcastle, Ind. Filed Feb. 7, 1911. Serial No. 607,101.

1. A piston comprising a hollow body, a head detachably fitted to and closing the hollow body and having a portion projecting therein, a rod, the projecting portion of the head and the rod having transversely registering openings, and a pin passing through the openings of the head and rod and connecting the latter to the former and adapted to be retained in place by the inner walls of the hollow body.

1,017,536. Silencer for Internal Combustion Engines. Mark Frank Graydon, Trenton, Ontario, Canada. Filed Oct. 9, 1911. Serial No. 653,730.

1. In a silencing device for internal combustion engines having an exhaust pipe, a valve seat secured to the exhaust pipe, a spider secured to the valve seat, a valve, a stem on said valve slidably mounted in the spider, and means for holding the valve in a normal closed position against the valve seat and an expansion casing having a dome shaped top and an exhaust aperture below said top, as and for the purpose specified.

1,017,538. Engine Starting Apparatus. Edward A. Halbleib, Rochester, N. Y., assignor to Northeast Electric Company, Rochester, N. Y., a Corporation. Filed Apr. 12, 1911. Serial No. 620,683

1. An automatic selector for engine-starting apparatus having, in combination, valves for controlling the admission of air to the respective cylinders of an engine, said valves being movable into open position by pressure from the respective cylinders, and connections between the valves whereby movement of either valve to open position causes the movement of a plurality of the other valves to closed position.

1,017,572. Attachment for Carburetters. James B. Lund, Chicago, Ill. Filed Dec. 18, 1911. Serial No. 666,314.

1. The combination of a carburetter, a pipe adapted to connect said carburetter with an engine manifold, and means adapted to be actuated by temperature and pressure for automatically regulating the temperature of the mixture delivered from said carburetter through said pipe.

2. The combination of a carburetter, an air intake pipe connected therewith, a shutter disposed in said pipe for controlling the relative proportions of hot and cold air delivered to said carburetter, and means actuated by variations in temperature and pressure for automatically controlling the operation of said shutter.

1,017,591. Method of Governing Internal Combustion Engines. Thomas Rigby, Dumfries, Scotland. Filed Oct. 16, 1911. Serial No. 654,941.

1. A method of governing internal combustion engines in which the main charge is drawn in on the suction stroke, which consists in admitting to the working cylinder at or near the end of the suction stroke, a supplementary charge cooled to a temperature below the temperature of the charge, and in varying the amount of the supplementary charge in accordance with the load.

1,017,592. Method of Working and Governing Internal Combustion Engines. Thomas Rigby, Dumfries, Scotland. Filed Oct. 16, 1911. Serial No. 654,942.

1. A method of working internal combustion engines in which the main charge is drawn in on the suction stroke, which consists in admitting to the working cylinder a supplementary charge cooled to a temperature of the usual charge at or near the end of the suction stroke when the load of the engine exceeds a predetermined amount.

1,017,597. Magneto. James E. Seeley, Los Angeles, Cal., assignor to High Frequency Ignition Coil Company, Los Angeles, Cal., a Corporation of California. Filed Jan. 31, 1911. Serial No. 605,775.

In a magneto, the combination with the field pole pieces of an armature, mounted to rotate between said pole pieces, and comprising heads having opposite notches, a core consisting of H formed laminations, having arms extending into said notches to secure the laminations in place, and segmental pole pieces secured to said flanges, and extending over and in contact with said core.

1,017,598. Tire. Arthur Seelig, Wilmersdorf, Berlin, Germany. Filed Sept. 6, 1911. Serial No. 647,802.

1. A tire, comprising a rim, and split resilient rings located transversely thereof, the lower part of the legs of each ring being completely inclosed by the rim, and means for preventing rotation of the rings within the rim, consisting of a projection on the one part engaging in a recess in the other part, and a compression-spring located in the gap between the two ends of the ring.

2. A tire including a rim having passages formed therein, split rings having their ends sliding in said passages, and coil springs interposed between the ring ends.

1,017,643. Automobile Curtain Support. Merle B. Barton, Peoria, Ill. Filed Dec. 27, 1910. Serial No. 599,442. (Cl. 21—62.)

In combination with a vehicle door, a collapsible curtain holding frame consisting of two uprights, a separate member pivoted at one end to the upper end of each of said uprights, said members being pivotally connected at their free ends, means for detachably securing the frame to the door, and a curtain secured at one of its edges to one of the uprights, and means at its opposite edge to detachably secure that edge to the opposite upright.

1,017,660. Shock Absorbing Device. Claud H. Foster, Cleveland, Ohio. Filed Apr. 9, 1908. Serial No. 426,144. (Cl. 21—105.)

1. The combination, with a pair of relatively movable members, of a shock absorbing device comprising a spiral spring having an open central portion operatively connected to one of such members and having its outer portion flexibly connected with the other member, and friction material interposed between some of the outer convolutions of said spring.

1,017,661. Cleaning Device. Claud H. Foster, Cleveland, Ohio. Filed Feb. 14, 1910. Serial No. 543,733. (Cl. 15—59.)

1. The combination, with a frame for a pane, of a coiled spring supported by said frame, said spring being provided with an extension, and a cleaning member carried by said extension and arranged to be moved in an arc across a portion of the surface of said pane.

1,017,681. Starter for Internal-Combustion Engines. Frank G. McKlveen and Leslie W. Naylor, Denver, Colo.; said Naylor assignor to said McKlveen. Filed Jan. 30, 1911. Serial No. 605,642. (Cl. 123—185.)

1. The combination with an engine shaft, of a wheel mounted thereon and connected in operative relation therewith, a device for operating the same, a spring connected with one extremity of the device, the said device having a section normally held in engagement with the wheel by the spring, said section having a centrally located space and the wheel being equipped with teeth adapted to move in said space, whereby the wheel may rotate without moving the device, the portion of the latter, beyond the said section, being adapted to engage the teeth to operate the wheel, and means for actuating the device to operate the wheel for engine-starting purposes, substantially as described.

1,017,689. Electro-Whistle Alarm. Charles H. Rettmann, Chicago, Ill. Filed May 6. 1911. Serial No. 625,510. (Cl. 177—311.)

1. In a device of the character described, the combination with a casing, an electromagnet therein, of a cover therefor, means on the cover operable by impulses of air to produce sound, a diaphragm, and diaphragm moving means associated with said diaphragm and magnet to produce impulses of air for the sound producing means.

1,017,732. Tire. Frederick E. Blaisdell, Philadelphia, Pa. Filed Jan. 31, 1911. Serial No. 605,694. (Cl. 152—2.)

1. An anti-skidding stud for tires having an elastic cover wound thereon under tension.

1,017,750. Mixer for Gaseous Fuel. George T. Hanchett, Hackensack, N. J. Filed July 16, 1908. Serial No. 443,748. (Cl. 48—180.)

1. In a device of the character described, the combination of a carburetter casing having a chamber therein, a heating coil within said chamber against which mixed air and fuel may impinge, said coil having a plurality of turns in each of several substantially parallel planes and surrounding a common axis, and entrance and exit ports, said coil lying in the path between said entrance and exit ports.

1,017,762. Clutch. Frank H. Jones, Muncie, Ind., assignor to Warner Gear Company, Muncie, Ind., a Corporation of Indiana. Filed Feb. 10, 1910. Serial No. 543,150. (Cl. 192—10.)

1. A multiple disk clutch comprising a rotary head formed integral with the supporting shaft and having a pluralitp of circumferentially arranged axially parallel arms, a wearing plate secured in position along one edge of each of said arms, a plurality of friction rings nested within said arms and having outwardly extending fingers projecting between said arms and engaging a wearing plate, a shaft arranged axially relative to the rotory head and projected into the space between its arms, a head secured to the inner end of said shaft

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and lying within the space between said arms, said head having a plurality of axially extending grooves in its circumference, a wearing plate detachably mounted in one side of each of said grooves, a plurality of friction rings interdigitated with the first mentioned friction rings and having inwardly projecting fingers lying within the grooves of the last-mentioned head and engaging said last-mentioned wearing plates, and a clamping member rotatively connected to the first mentioned head and arranged to force the interdigitated friction rings into engagement with each other.

1,017,764. Wheel Tire. Paul M. Kemter and Arthur W. Hentschel, West New York, N. J. Filed Dec. 14, 1910. Serial No. 597,293. (Cl. 152—8.)

A tire of the class described comprising an outer sheathing of rawhide having clencher enlargements, a core formed from a single coil of wire, a sheet metal wear member curved transversely to conform to the curvature of the core and bearing around the outer portion of the same, an intermediate fabric member between the outer member and the core and detachably united at its edges, a fabric enlarging member between the outer portion of the outer member and the intermediate member, a fabric enlarging member between th outer portion of the intermediate member and the metal wear member, and fastening devices extending through the outer sheathing the intermediate member and the enlarging member, said fastening devices bearing at their inner ends upon the wear member.

1,017,794. Circuit Breaker for Magneto-Electric Machines. Carl A. Pfanstiehl, Highland Park, Ill. Filed Apr. 18, 1910. Serial No. 556,245. (Cl. 123—166.)

1. In a circuit breaker of the type herein described, the combination of an armature housing, a casing formed with a lateral pocket and adapted to having a turning adjustment on said housing, a cam disk arranged in said casing and receiving motion from the armature shaft, a movable contact lever pivoted in said casing and operatively engaging said cam disk, a plug of insulating material formed with marginal grooves engaging the margins of an orifice in a wall of the lateral pocket aforesaid, and a fixed contact member mounted on said plug and arranged in the path of the movable contact lever aforesaid, substantially as set forth.

1,017,809. Puncture Closure for Pneumatic Tires and the Like. Robert Sampson, Montreal, Quebec, Canada. Filed Apr. 21, 1910. Serial No. 556,896. (Cl. 152—26.)

A puncture closure for pneumatic tires and the like embodying, in combination with an interior sealing member, an exterior clamping member comprising a thin, concavo-convex, skeletonized metal disk provided with a centrally-disposed, interiorly-threaded neck, a shield of elastic material surrounding said disk and extending through the skeletonizing openings therein, and a shank secured to said interior member and engaging the threaded neck of the exterior member.

1,017,814. Resilient Tire. Semple S. Scott, Chicago, Ill. Filed Apr. 27, 1911. Serial No. 623,728. (Cl. 152—8.)

1. A tire consisting of a plurality of circumferential rows of radially extending blocks, means for supporting said blocks so that each may yield independently in a radial direction toward the tire center, said blocks having outer ends which together constitute the tread of the tire, each block having the edges of its outer end located closely adjacent to the edges of the outer ends of the adjacent sides of adjacent blocks being inclined away from each other toward the tire center.

1,017,877. Change Speed Gearing. Abraham B. Landis, Waynesboro, Pa. Filed Oct. 26, 1907. Serial No. 399,252. (Cl. 74—26.)

1. A change speed gearing comprising a driving and a driven shaft, a series of disks slidably mounted upon each shaft and arranged with those on one shaft engaging between the adjacent faces of those on the other shaft, means for clamping said disks by a force automatically adjusted to the load, one of said shafts being mounted in adjustable bearings, said bearings and means for adjusting said bearings to carry the shaft therein toward and from said other shaft, substantially as set forth.

1,017,900. Apparatus for Deodorizing the Exhaust Gases of Motors. Charles H. Phillips, Paughkeepsie, N. Y. Filed July 27, 1911. Serial No. 640,941. (Cl. 110—183.)

1. The herein described gas deodorizing apparatus consisting of an upright cylindircal receptacle adapted to contain deodorizing liquid, an inclined baffle plate secured across its interior and having a passage through it near its lower edge and below the liquid level, a gas inlet pipe opening through one side of said receptacle below the lower edge of the plate, a discharge pipe opening through the top of the receptacle above the upper edge of the plate, and a transverse row of tubes seated in and opening through said plate with their bodies standing at right angles to it and their bores directing the gases obliquely across the interior of said receptacle from a point beneath the upper portion of the plate to a point above it remote from said discharge pipe.

1,017,909. Traction and Non-Skid Device. James W. Reid, New York, N. Y. Filed Mar. 16, 1911. Serial No. 614,772. (Cl. 152—2.)

1. A traction and anti-skid device comprising a plurality of traction members, each being substantially of J-shape and having its ends extending radially of the wheel, the short end of each traction member terminating in an offset portion adapted to extend within the felly of the wheel, the longer ends extending to points adjacent the hub of the wheel, and connecting members adapted to connect the longer ends of said traction members.

1,017,919. Spring Wheel. Samuel P. Sanders, Aurora, Neb., assignor of one-half to Christian C. Grosshans, Aurora, Neb. Filed Aug. 18, 1910. Serial No. 577,744. (Cl. 152—52.)

In a spring wheel, the combination, with a tread rim, an inner rim, and spokes rigidly connecting the rims of a hub having an annular groove, a bumper secured in the groove, a bumper ring carried by the inner rim within the said groove with a space between the ring and the hub-bumper, and a series of spiral springs on each side of the spokes and forming the only connection between the hub and the tread rim.

1,017,923. Driving Mechanism. George Washington Slater, Oakland, Cal. Original application filed Nov. 17, 1910, Serial No. 592,899. Divided and this application filed Oct. 5, 1911. Serial No. 653,037. (Cl. 74—7.)

1. A shield housing to be used in connection with a motor vehicle, comprising a pair of sections, each section being provided with a pair of legs adapted to straddle the axle of a vehicle for supporting said sections being provided with a socket portion, a drive shaft passing through one of said sections of said housing and a gear thereon, said gear fitting in said socket formed in one of said sections, an auxiliary shaft passing through the other of said sections of said housing and a gear thereon fitting in said socket and meshing with said first-mentioned gear, and means for securing said sections together.

1,017,938. Sounding Horns. Alva Williamson, Atlantic, Iowa. Filed Mar. 29, 1910. Serial No. 552,188. (Cl. 116—1.)

1. In a device of the class described, the combination of an engine exhaust pipe, an inelastic gas storage receptacle in communication with the exhaust pipe, said exhaust pipe being provided with an outlet other than the one leading to the storage receptacle, a manually operated valve device whereby the exhaust gases may be directed either into the storage receptacle or through the said outlet, a check valve interposed between the exhaust pipe and the storage receptacle to prevent the flow of gas from the storage receptacle to the exhaust pipe, a pressure equalizing receptacle, there being a restricted passageway provided between said receptacle and the storage receptacle and with a wind instrument operatively connected with the equalizing receptacle, the passageway from the equalizing receptacel to the wind instrument being unobstructed, whereby gas under fluctuating pressure in the exhaust pipe may either be discharged or directed into the storage receptacle, and the said gas under unequal pressure in the storage receptacle may be delivered to the wind instrument at a substantially uniform pressure, for the purposes stated.

1,017,988. Vehicle Wheel with Elastic Spokes. Heinrich Munk, Berlin, Germany. Filed July 30, 1907. Serial No. 386,248. (Cl. 152—51.)

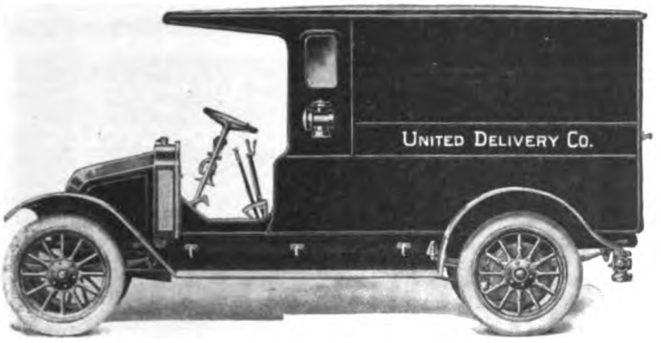
An elastic wheel comprising in combination a hub and a felly, and a number of spokes between the same consisting each of one endless pear-shaped blade or band spring having curved or arc-shaped inner and outer portions and attached to said hub and felly respectively, the adjacent spokes being further connected at their outer and inner arc-shaped portions, substantially as and for the purpose set forth.

Reissues.

13,368. Explosive Engine. Cyrus E. Mead, Dayton, Ohio, assignor, by direct and mesne assignments, to The Mead Engine Company, Dayton, Ohio, a Corporation of Ohio. Filed May 8, 1911. Serial No. 625,903. Original No. 921,264, dated May 11, 1909, Serial No. 423,094.

1. In an explosive engine, the combination with a cylinder having pockets and ports therein, a piston, a main shaft, and a connection between said piston and said main shaft, of a rotary inlet valve, a rotary exhaust valve, said valves being independent of each other and provided with ports adapted to register with the ports in the cylinder, caps having ports adapted to register with the valve ports, an independent shaft for each of said valves, a driving shaft common to said valve shafts, gears interposed between the valve shafts and said common shaft, and means for actuating the common shaft from the main shaft of the engine.

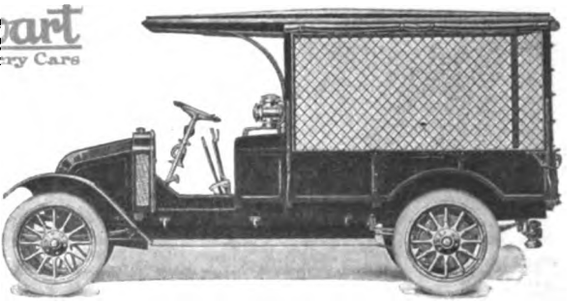
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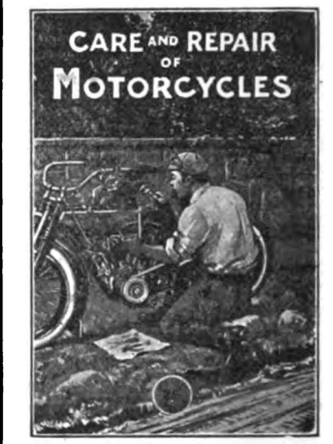
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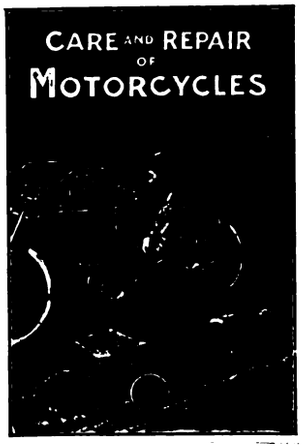
A trouble saver for the motorcyclists



This book contains more practical advice for the rider, more good hard sense, more suggestions as to how to keep out of trouble, and how to get out of it, than has ever been printed heretofore in any one book.

¶ It fits the coat pocket and it includes free engine clutches, two-speed gears, mechanical lubricators and magnetos, together with special matter on motors, valves, carbureters, fuel and important general subjects, all plentifully illustrated.

¶ Dealers and jobbers in all parts of the country are selling "Care and Repair of Motorcycles" to both new riders and veterans as the best aid in correcting and avoiding motorcycle trouble.



Sent Postpaid on Receipt of 25 Cents

Special Rates to Jobbers and Dealers on Quantity Orders.



BICYCLING WORLD COMPANY
1600 Broadway **New York**

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To the Ladies, God Bless 'Em

They'd like to drive Gasoline Cars and would, too, but for the cranking bugaboo.

Show them that by pushing a button they can start or light a car any time, anywhere, winter or summer, and you've got a sure sale.

But if you want to keep them pleased assure them continued, unfailing service—THAT depends on the Battery.

BE SURE IT'S AN

GLBA

Use Class A GLBA Battery with an Electric Lighting Generator
Use Class B GLBA Battery with an Electric Self-Starter

Write Us For Full Information

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

New York Branch, 136 West 52nd Street
Chicago Branch, 436 So. Dearborn Street
Detroit Branch, 1191 Woodward Avenue

Depots in all Principal Cities in the United States, Canada and Mexico

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DEALERS—

Out of EUROPE Comes The Aristocratic

METALLURGIQUE

The Car You Can Sell to Men of Means and Fine Discrimination

¶ Are you in a position to locate and interest men of means, social standing and ability to recognize a car of impressive individuality, tremendous prestige and sterling performance.

¶ If so, we will use our sales organization to assist you in selling the Metallurgique, Europe's most talked of car and the one most sought after.

¶ This automobile is the product of fifty years steel making near Brussels, the Pittsburgh of Europe. In materials, it stands alone in quality. Its chassis is a revelation in construction that has given it a proven title, "The unbreakable car." In body design it is a model of sensational European originality that causes even the blase New Yorker to turn to admire.

¶ Metallurgique dealers have as sales ammunition a list of owners that reads like the International Social Register. Write for our beautiful brochure—it will introduce us.

METALLURGIQUE MOTOR CO., 1934 Broadway, New York

W. C. & H. N. ALLEN, Proprietors

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"The Horn that's Made for the Discriminating"

TUTO HORN

THE TWO TONE HORN

Forces Attention.

IN the case of an emergency, the TUTO horn forces attention in a most natural manner, which is exclusive with the TUTO method of operation.

¶ The low note of the TUTO is used for all regular service, and being more distinctive than the bulb horn gets the right of way 90% of the time.

¶ When this low note fails to attract attention, or in case of emergency, it is possible to go from the low to the loud signal instantly, by the mere increasing on the pressure of the same button used to make the milder signal.

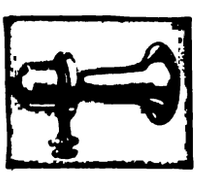
¶ The quickly going from the low note to the one of more power, forces attention the same as the shouting of a command supplementary to a request which has been made in the ordinary tone of voice.

¶ There is no paralyzing action, as the low note serves as an introduction and the way is positively cleared without fuss or confusion.

¶ On the other hand, the inflexible, one-loud-note electric horn has a tendency to startle and paralyze the person to inaction. With such a signal, there is always the possibility of promoting accidents rather than averting them.

¶ The TUTO horn is a true safety signal as it acts naturally and requests or demands the right of way in a tone corresponding in loudness to the requirements of the situation.

¶ Such a warning device is best for standard equipment.

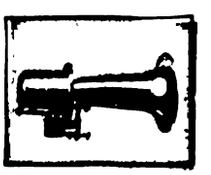


TUTO Horn, $25.00

The Dean Electric Co.

260 Taylor Avenue, Elyria, Ohio

"Look for Dean where Quality's seen"



TUTO-ETTE $17.50

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That's what you can say to your customer when you sell him

PENNSYLVANIA Oilproof VACUUM CUP TIRES

And this is the biggest thing that ever *was* said about tires or ever *will be* —

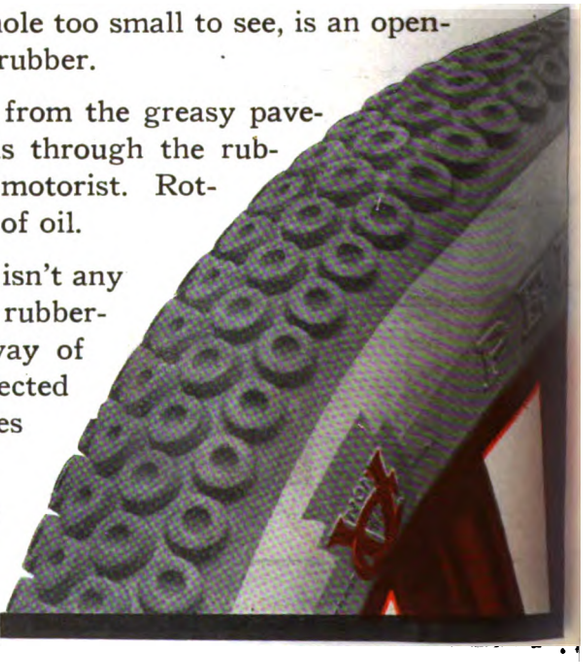
Because Oil disease has always been the real big tire bugaboo—has cost the motorist more than all other tire ailments combined. Every pore, every little cut and hole too small to see, is an opening for Oil to creep in and begin its work of disintegrating the rubber.

Oil disease is the right word. Tires catch it from the oiled road, from the greasy pavement where motors stop, from the oily garage floor. It spreads through the rubber. The tread goes to pieces. "Rotten tire," says the disgusted motorist. Rotten indeed, not ***manufactured*** so, but ***become*** so from the action of oil.

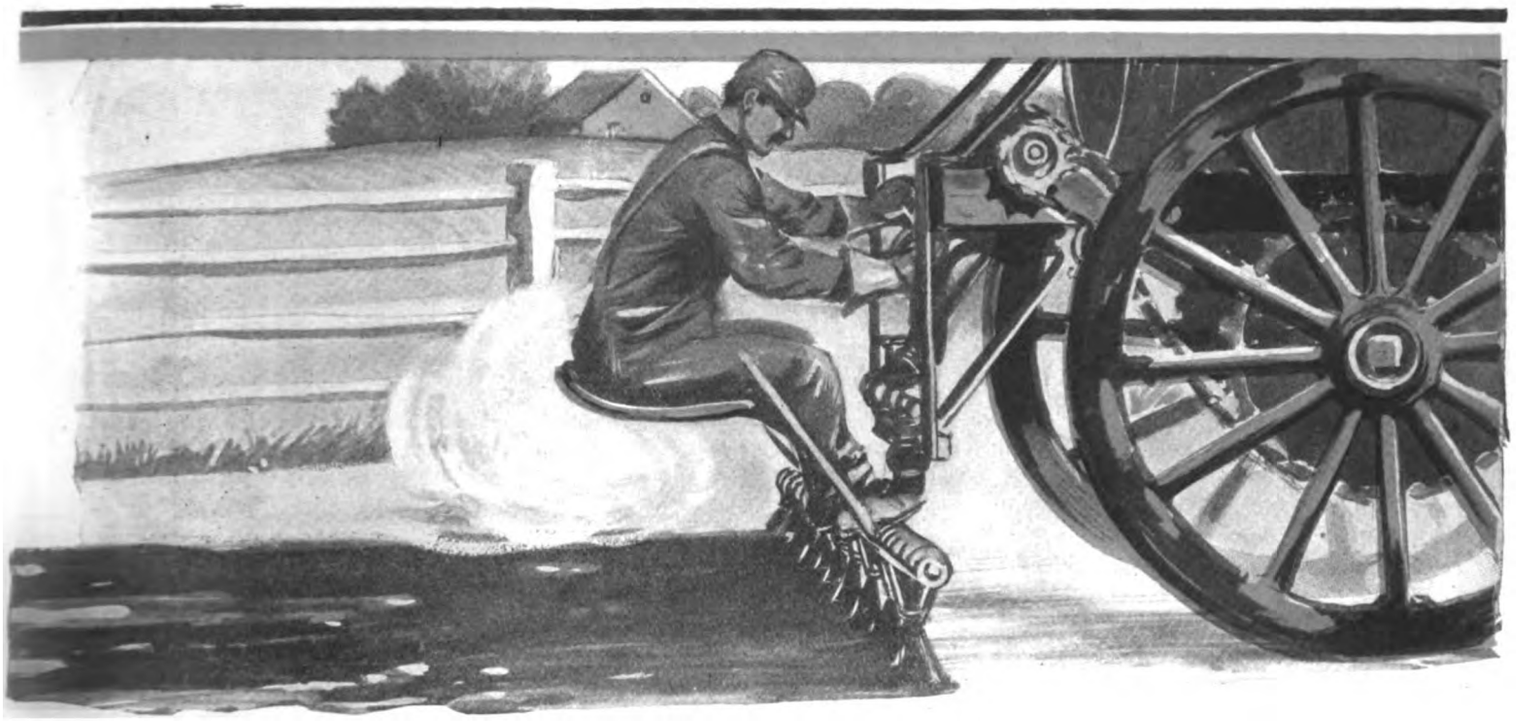
We reasoned this way: There isn't any substitute for oil, there isn't any substitute for rubber. There is no practical way of taking the rubber-destroying element out of the oil. But there ought to be a way of making rubber Oil Proof. And we finally perfected the Oil Proof rubber compound that now goes into Vacuum Cup Tires.

NON SKID TRADE MARK REG. U.S. PAT. OFF.

A grand achievement on top of the Vacuum Cup Success—the one ***entirely non-skid*** device.



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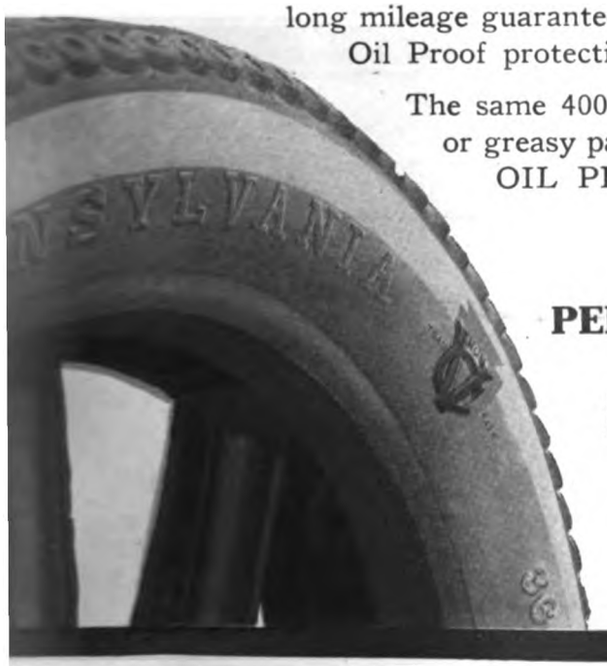


When we say ***oil proof*** we mean OIL PROOF. Absolutely unaffected by oil. We have had samples from our Oil Proof Vacuum Cup Tires in oil for months. The rubber has remained absolutely unchanged without loss of life, strength or toughness.

Now Let's Get Down to the Business End

OF COURSE we are going to drive this greatest of all tire improvements home to the consumer. We are hitching "Oil Proof" up to "Vacuum Cup" in round style in our advertising in The Saturday Evening Post, Collier's, Life, other weeklies and the monthly magazines.

The VACUUM CUP Non-skid has scored a tremendous success. Combined with the OIL PROOF quality—well, weigh the question yourself. Will it make a ten strike with the tire expense ridden Motorist? For every one who has demanded Vacuum Cup Tires for its Non-skid safety and long mileage guarantees will there be three who will demand them for the added Oil Proof protection? Or will there be five—or a dozen?



The same 4000 mile guarantee, the same guarantee against skidding on wet or greasy pavements, the same extra heavy sizes, the same prices—***and*** OIL PROOF.

If you are already a Vacuum Cup dealer, revise your orders upward.
If you are not handling Vacuum Cups—well, don't be left behind, that's all.

PENNSYLVANIA RUBBER CO., Jeannette, Pa.

(Reorganized February 1, 1910)

BRANCHES

Pittsburgh, 505 Liberty Ave.
Detroit, 254 Jefferson Ave.
Chicago, 1004 Michigan Ave.
Minneapolis, 34 S. 8th St.
Kansas City, Mo., 514 East 15th St.
Cleveland, O., 1837 Euclid Ave.
Seattle, Wash.

PENNSYLVANIA RUBBER CO. OF NEW YORK
New York City, 1700 Broadway
Boston, 149 Berkeley St.

PENNSYLVANIA RUBBER CO. OF CALIFORNIA
Los Angeles, 930 South Main St.
San Francisco, 512-514 Mission St.

An Independent Company with an Independent Selling Policy

We also manufacture the Pennsylvania Inner Tube, the highest grade tube on the market, as well as the famous "503" Inner Tube, the standard medium priced tube, half a million of which were sold last season.

NON SKID
TRADE MARK
REG. U.S. PAT. OFF.

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The Dorris Line

BUILT TO LAST

Mr. Dealer: Some automobile dealers make only a scant living out of their business. Are you one of these? Are you doing business as did your forefathers who are under the ground? Or have you fallen in line with modern methods that have revolutionized selling in all lines? You are in business for profit—have you adopted the modern, high profit methods which are the outgrowth of the experience and mistakes of the past?

Today or tomorrow you will have a call for a **high grade** MEDIUM PRICED car. There is a staple and steadily growing demand for machines of this sort. If you handle only a **high priced** or a **low priced** car, the prospect for a **high grade** MEDIUM PRICED CAR will certainly buy elsewhere. Your cars do not appeal to him.

The secret of maximum profit is to supply every demand—to handle a car for every class of trade—to get a **good** chance at **all of your market.**

You may not want the Dorris Car now, but

You Will Want the Dorris Car When You Know It

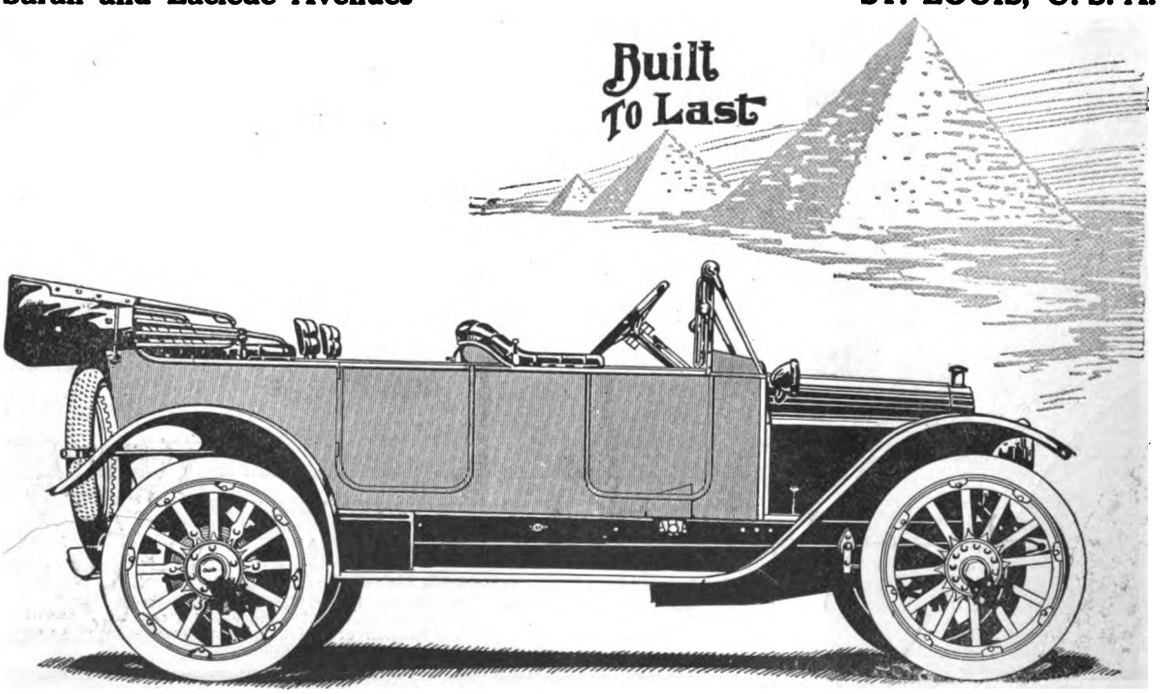
It is one of the sturdiest, most comfortable, smoothest running, longest lived cars built regardless of price.

One big reason why the average agent don't make money today is because service to his customers costs him too much. The Dorris minimizes this trouble because it probably requires less service to keep it keyed up to its best, and gives this service longer than any other car on the market. The first car built 8 years ago, is still in regular daily use. The reasons are many.

We have some mighty interesting information for you—write for the details of our proposition.

DORRIS MOTOR CAR COMPANY

Sarah and Laclede Avenues **ST. LOUIS, U. S. A.**



5-Passenger Touring Car, Electrically Started and Lighted Fully Equipped, $2500.00.

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Specify Bosch For 1913 Season



Used By All Famous Drivers

Bosch Plugs

AS GOOD AS BOSCH MAGNETOS

THE winning car of the Vanderbilt Cup Race and the place cars too, used Bosch Spark Plugs. Seven of the eight cars to start in this race depended upon Bosch Plugs with excellent results.

The winning car of the Grand Prize Race and eleven of the twelve cars to start used Bosch Plugs—Bosch Magnetos were equally as popular, *of course*.

No ignition system has ever proven as efficient, as perfect nor as reliable as that completed by the use of the Bosch Spark Plug. Use them on your fall tour.

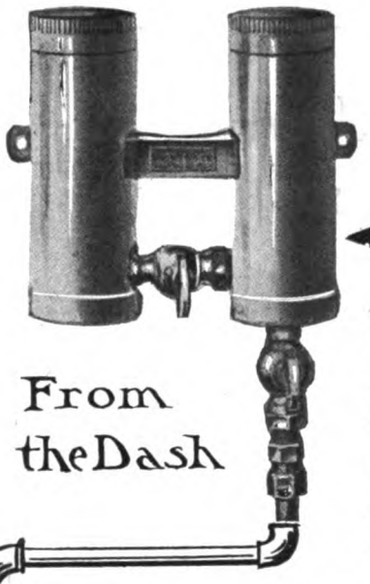
A BETTER PLUG AT THE RIGHT PRICE $1.00 Each

Ask your Dealer—send for literature

Bosch Magneto Company, 223-225 West 46th Street NEW YORK

DETROIT CHICAGO SAN FRANCISCO TORONTO

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From the Dash

Your Trade is Looking for a Real Gasoline Saver

HERE IT IS

Every car owner can be interested in the National Compound Mixer and Primer—a device which is positively invaluable to car owners who want to get the most and best out of their cars.

Increases Power from 10 to 40 Per Cent.
Saves 10 to 40 Per Cent. Gasoline
Can be Installed in 20 Minutes

THE NATIONAL COMPOUND MIXER & PRIMER

Performs a triple function: **Making a Poor Mixture Perfect**
Priming the Engine
Cleaning the Engine

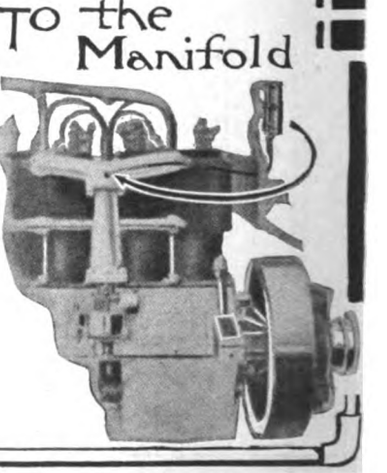
It is a notorious fact that a large proportion of gasoline enters the cylinder in an unmixed state and is simply burned out. With our device this is impossible.

You will note that the pipe running from the mixer enters the manifold intact right at the "Y," and under all conditions of speed, temperature, etc., it furnishes exactly the right amount of air for every drop of gasoline, absolutely eliminating all waste of fuel.

We call particular attention to the primer in its dual capacity. A turn of the primer valve will instantly furnish all cylinders with the proper amount of gasoline and air properly mixed for starting. This primer will also clean the cylinders by simply using several ounces of alcohol or kerosene, running the engine on retarded spark.

The whole story is before you in word and picture, and if you want to get a real live seller—one that will produce rapid and profitable sales, then write today for our dealer proposition.

National Manufacturing Co.
Kalamazoo, Mich.



This Engine will give More Speed and Power and It will avoid 50% of Engine Distemper

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SHELDON

Brake Equipment E-11

New Features Unusual Steel

Highest Braking Efficiency

This equipment is an unusual combination with design embodying radical improvements and materials that are quality clear through.

We claim for it out-of-ordinary features of strength, quick response, power and durability. Both brakes are on the axle, taking all strain from chain and doing away with the jack shaft bending period.

Inside and outside brake arrangement keeps down the extreme bending moment on the axles and allows bearings to be placed almost under the line of the sprocket. They are of the "wrap up" or self intensifying type, giving prompt action, more uniform wear and pressure on drum—reducing the unit pressure on drum and prolonging the life of the lining. A factor of safety of 4 to 1 is standard under the heaviest emergency strain.

Spider and parts are built of best steel castings. Radius rod shank of chrome nickel steel—drop forged fork—perfected lubrication.

These are bare facts that outline in part the story of Brake Equipment E-11. Blue prints and specifications are at your disposal.

SHELDON AXLE COMPANY

WILKES-BARRE, PA.

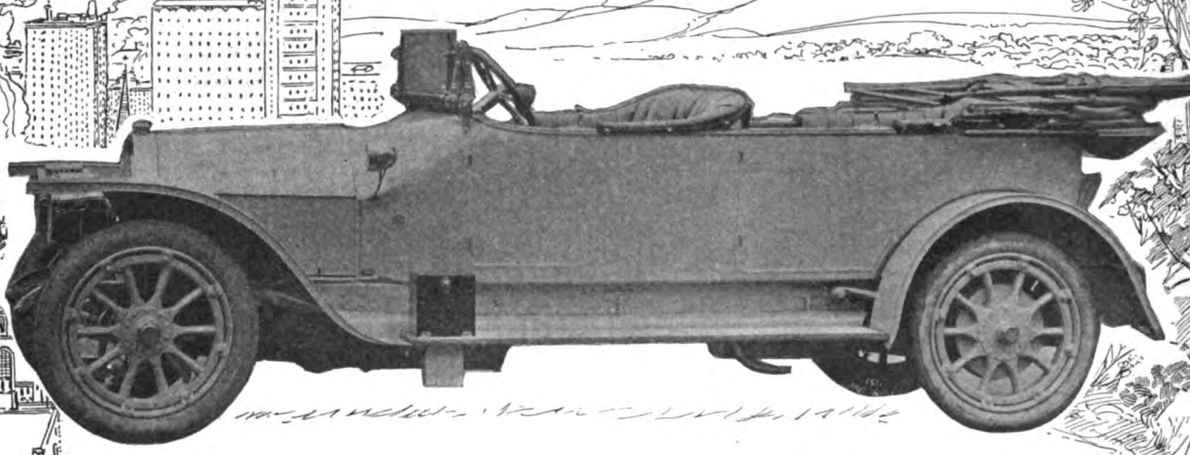
Branch Office
68 East 12th Street
CHICAGO

Branch Office
1215 Woodward Avenue
DETROIT

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Lancia Cars

"They copied all they could follow,
But they couldn't copy my mind,
And I left 'em sweating and stealing
A year and a half behind."
—Kipling



DEALERS You Can Sell This Car

"The Best of Europe At American Prices"

The Lancia propaganda has taken root and is growing in America—and the reason is mighty obvious.

There is a class, Mr. Dealer, and a restricted one at that, who understands, appreciates and buys this peer of light European cars—(we will send you the names on request).

And there are those in *your* territory to whom its combination of strength, efficiency, simplicity and design will appeal.

The Lancia is the best of Europe at American prices—meaning that the purchaser of a Lancia car does not have an extravagantly priced European novelty of freak design—

But a *real service car* from Europe—a masterpiece of European design, steel and finish—made and tested in the Alps under the personal supervision of Vincenzo Lancia himself—with a guaranteed value, pound for pound, dollar for dollar greater than that offered by any American or European manufacturer.

Do you want to sell a car of class, service and beautiful design to the fastidious and critical? If you do, then come to New York if possible—see and know the Lancia—or write and let us give you details of the "20" and "30" mounted with coach work in keeping with the chassis.

For Town

For Country

ADAMS LANCIA COMPANY

235 West 38th Street **NEW YORK, N. Y.**

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Rudge-Whitworth Detachable Wire Wheels

FITTED WITH

HOUK Quick Detachable RIMS

Now made in the U.S.A.

BY THE

Standard Roller Bearing Company of Philadelphia

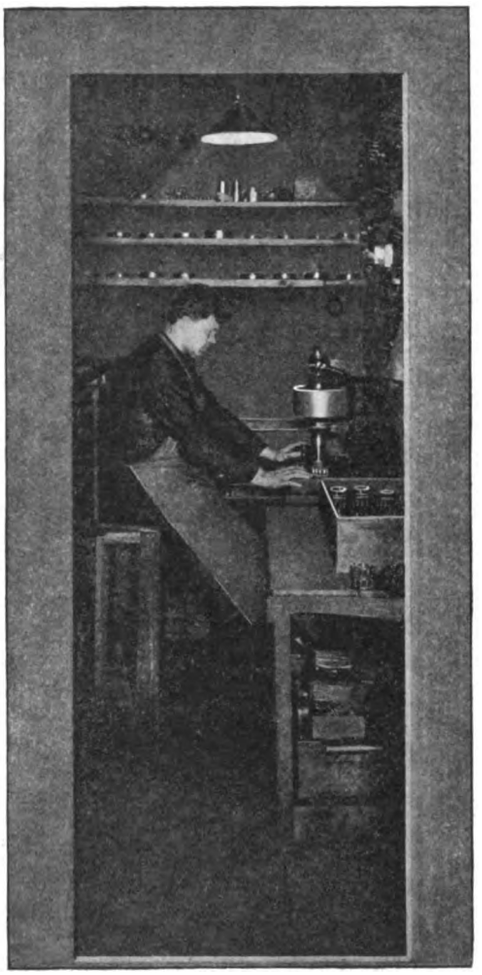
Sole Selling Agent

Geo. W. Houk Co.

803 South Penn Square Building
Philadelphia - Pennsylvania

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The Music Master of Timkenville





FF in a quiet corner, in a sound proof cabinet, sits the man with an ear for music.

Listening all day to the hum of the bearings as they whirl on the spindle before him.

He's giving the last—the "musical test" to each

TIMKEN
Roller Bearing

Like a grand piano his instrument has a long, thin sounding board.

As rollers revolve, and cups and cones spin, they give forth a musical tone. That is—if the bearing is perfect.

But let there be present the slightest thing wrong and the sound becomes discord—not music.

Before bearings come to the musical choir each part is inspected and tested. The rollers are sorted by guaging machines, the bearings assembled and run under load at high speed.

The Music Master's test is a final test for quietness and "sweet running."

It was rightness of principles that first brought success and fame to the Timken Bearing.

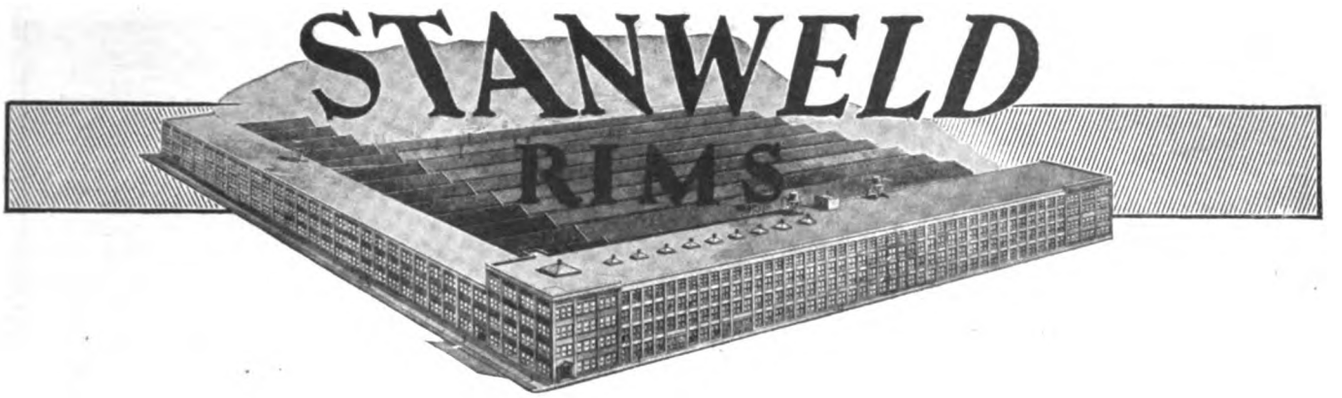
Added to right design comes a value unseen, in right steel, right heat-treatment, right inspections and testing.

And topping off all comes this delicate test—the test that the Music Man gives them.

The Timken Roller Bearing Company
Canton, Ohio, U. S. A

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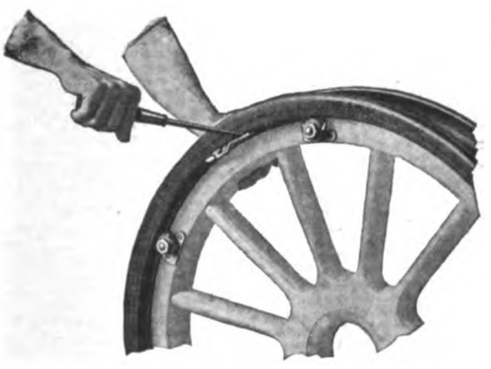


For Every Car For Any Tire

STANWELD rims are not the product of a self conceit.

Mechanically they fulfill every requirement of the car owner, car manufacturer and tire maker.

Structurally they are the culmination of rim making as evolved by the pioneers and masters of the craft.



Method of releasing Spring Latch from Lock

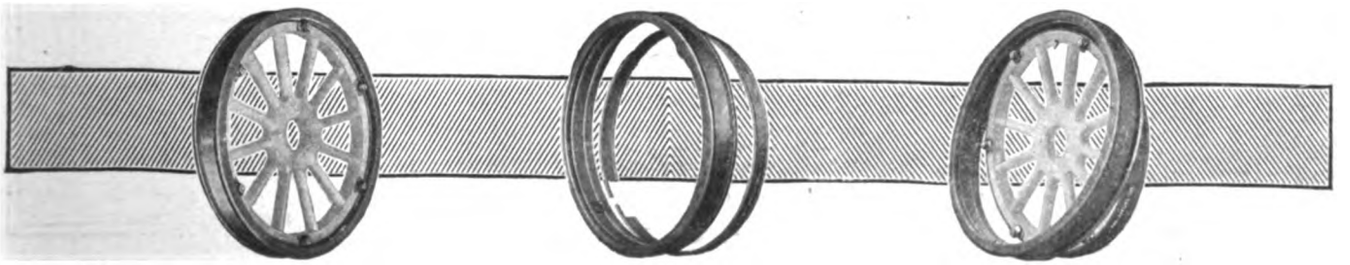


Method of prying Detachable Side Ring from Groove Note position of Latch

Not a part—not a piece of material—not a function but that is a proved betterment over all former types of rims.

Priced for the multitude and used as standard equipment on America's superlative cars, their destiny as universal equipment is assured.

The Standard Welding Co., Cleveland, Ohio



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Let's Reason Together—*about Price*

TO you who are considering buying a motor car, we want to offer a few suggestions on the subject of price. Please do not think these are wholly selfish. Of course, we want to sell you a Chalmers car if possible. But whether you buy a Chalmers or not, we believe we can help you. For the suggestions we make are based on the experience of thousands of buyers.

And so we say to you, first of all: Buy a real car. Don't economize too closely on the purchase price. Economy is not merely spending the least money; it is getting the most for your money. And buying an automobile at too low a price is the worst economy in the world.

If a man is going to pay $1000 for a motor car, he surely is not so pressed for funds that he could not afford to add enough more to that $1000 to get him a really high grade motor car—a car of genuine quality. The additional cost, distributed over the years he will use the quality car, is nothing compared to the satisfaction of owning it.

If a buyer doesn't get a car of real quality to start on, he will surely want one later. Many who purchase low priced cars graduate from what they buy to what they should have had to begin with. But in doing this they pay from $300 to $600 for so-called "automobile experience."

You don't need this costly experience. For nowadays anyone can learn to handle the most expensive car as easily as the cheapest. So buy a quality car to start with.

If you investigate, you will find that there is a great difference between a $1000 car and a $1950 Chalmers—even greater than the price indicates. Of course, there is some resemblance in these cars. They all have four wheels. They all have a motor. They have transmissions—and other things necessary to make the car go. In these respects, all motor cars are alike. Just as all horses are alike, because all horses have four legs, two eyes, a nose and a mouth.

But what makes one horse carry off all the blue ribbons while another is only a common hack? It is a difference in the quality of the two horses. And there is the same sort of difference in the quality of motor cars.

You can't buy more quality than we have put into the 1913 Chalmers "Thirty-Six"—no matter what price you pay. You would realize this if you could go through the Chalmers factory, if you could see these cars being made practically complete in our own shops—from front axle to rear license bracket.

We are building for the future. We believe firmly that those concerns that will be doing a big business five or ten years from now will be the ones that laid the foundation by putting honesty of construction and honesty of purpose back of the cars they are building now.

So we say to all those who are going to pay $1000 or more for a motor car: It is to your interest to examine the design, the features and the construction of the 1913 Chalmers "Thirty-Six" at $1950, fully equipped, and see if you really are not money in pocket by laying out the extra few hundred dollars in the original purchase price rather than buying a car at a lesser price, only to trade it in later at a big discount from the original purchase price.

Think over this price question and give us an opportunity of talking it over with you, so that you may at least be sure of having all the facts before signing your check for the car.

So see the 1913 models at our dealers. And send for our new book, "Story of the Chalmers Car." This is not the usual automobile story. We have been told by friends, even in the business, that it is the best automobile book written. Write for it.

Chalmers Motor Company. Detroit. Mich.

These cars have all the Comfort, Luxury, Good Looks and Convenience of any cars at any price.

On these points we believe you positively cannot buy more in any automobile than you get in the 1913 Chalmers cars.

"Thirty-Six" (four cylinders)	$1950
"Thirty" (four cylinders)	$1600
"Six," 5-passenger	$2400
"Six," 7-passenger	$2600
"Thirty-Six" Limousine	$3250
"Six" Limousine	$3700

(Prices include full equipment and are f. o. b. Detroit.)

Note these splendid features and judge for yourself the superiority of the 1913 Chalmers cars.

Electric Lights. Gray & Davis electric lighting system, acknowledged the best on the market.

Turkish Cushions. Most comfortable and highest grade automobile cushions made.

Eleven-Inch Upholstery. Featured on some of the highest priced cars.

Chalmers Self-Starter. A year's use has proved its simplicity, economy and reliability.

Long Stroke Motor. 4¼" bore; 5¼" stroke. A motor of unusual power. Built complete in the Chalmers shops. Four-forward speed transmission gives maximum of flexibility.

Continental Demountable Rims. Make it possible to change tires in a few minutes and without hard work.

Large Wheels and Tires. Insure easy riding and low tire upkeep. 36"x4" tires on "Thirty-Six"; 36"x4½" tires on "Six."

Beautiful Bodies. The new-design, flush-sided metal bodies are very roomy. Twenty-one coats of paint and varnish give unsurpassed finish.

Nickel Trimmings. Handsome; easy to keep clean.

Dual Ignition. Most reliable system built.

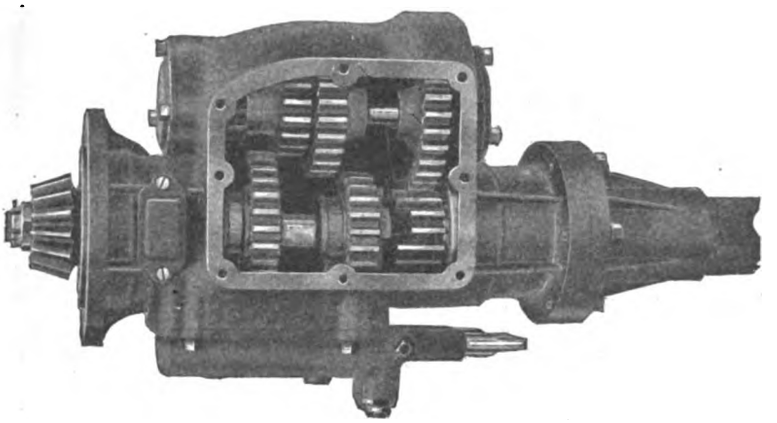
Improved Carburetor. Readily adjustable from dash to suit all driving conditions.

Speedometer. A jeweled magnetic speedometer, specially designed for Chalmers cars, is regular equipment.

Silk Mohair Top. A splendid, perfectly fitting top, tailor-made in Chalmers shops.

Rain-Vision Windshield. Easily adjustable, made especially to fit the Chalmers built-in dash.

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Every Manufacturer—

KNOWS that the greater the output the less the cost per car.

THEY know, too, that stock parts, when made by specialists, are more dependable than when made by themselves.

AGAIN—they know that to use the reliable stock parts increases the output capacity of the plant and reduces the "overhead" per car.

Covert Transmissions—

WILL enable you to increase the output of your plant without increasing your "overhead."

COVERT has specialized in transmissions for over fourteen years, so you can depend on their being better than you could make yourself.

WHY not let us tell you more about COVERT TRANSMISSION?

Covert Motor Vehicle Company

Factory: Lockport, N. Y.

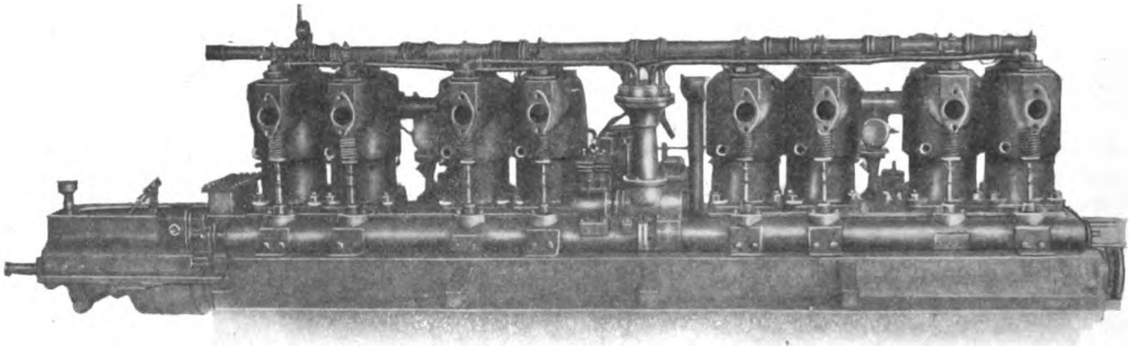
Sales Office: 1422 Ford Building, Detroit, Mich.

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JENCICK

Why we built the first successful United States torpedo boat engine and what this ought to mean to builders of quality commercial trucks.

Ordinarily the United States Government is a close buyer—but never at the expense of quality. In experimenting, however, price is a minor object—efficiency counts 100 per cent.



The motor shown here in a partially completed state was built on terms of not less than $15,000—nor more than $25,000—a wide latitude in which to operate—but we were bonded to make good.

The specifications called for not less than 200 H. P. sustained on a maximum run of 12 hours and a half speed run of 12 hours—pretty hard gruelling for a high speed marine engine.

To make a long story short, we turned this engine over to the Government and in tests made by Government officials, it **sustained 245 H. P. on the 12 hour high speed test with but 10 H. P. drop during the run.**

This engine was accepted and is now in active service.

Now, Mr. Truck Manufacturer—granting that Jencick engines are standard in hundreds of power craft, great and small—that they are **not** built on a price cutting competition plan but on merit (for which we charge)

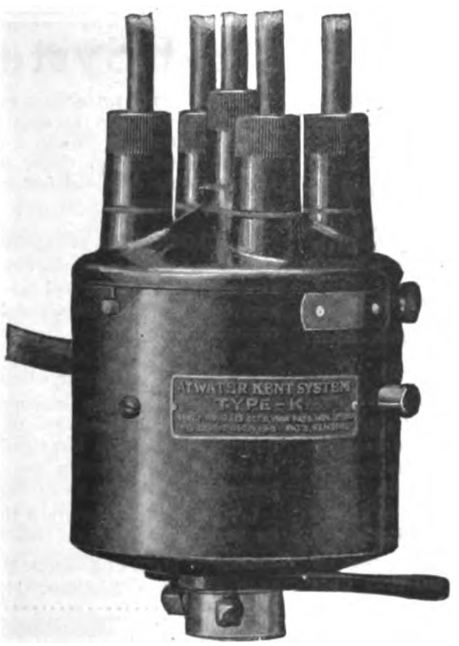
Then is it not reasonable to suppose that we can build engines for you that will hold and build a reputation **that must be back** of the hard worked, much abused truck?

JENCICK MOTOR CORPORATION, PORTCHESTER

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The New Atwater Kent Ignition System

With Automatic SPARK ADVANCE



DISTRIBUTORS

New York.....E. J. Edmond Co.
Chicago.....Motor Car Supply Co.
San Francisco, Chanslor & Lyon M. S. Co., Weinstock-Nichols Co.
Milwaukee.....Julius Andrae & Sons.
Omaha.....Omaha Rubber Co.
Chattanooga.....Sanford Bros.
Dallas.....Fisk Co. of Texas.
Denver.....Auto Equipment Co.

Of extreme interest to every motorist

THE Automatic Spark Advance feature of the Type "K" Atwater Kent System is a long stride forward in ignition practice.

With this device, the control of the spark timing is entirely automatic (although the hand lever can be used if desired). This means that the spark is always properly timed to get the greatest possible power from the motor at any speed from three to seventy miles per hour.

No human mind can follow accurately the speed variations in an automobile motor and accordingly regulate the spark setting to get the best results.

The automatic spark control of the Atwater Kent System is more than human in its performance—it is sensitive to the slightest variation in speed—immediate in its response and positive in its action. The operator can forget his spark lever, knowing that his spark is being better regulated than he can do it himself.

The increased safety due to the automatic retarding of the spark for starting is alone more than sufficient to commend it to the modern motorist.

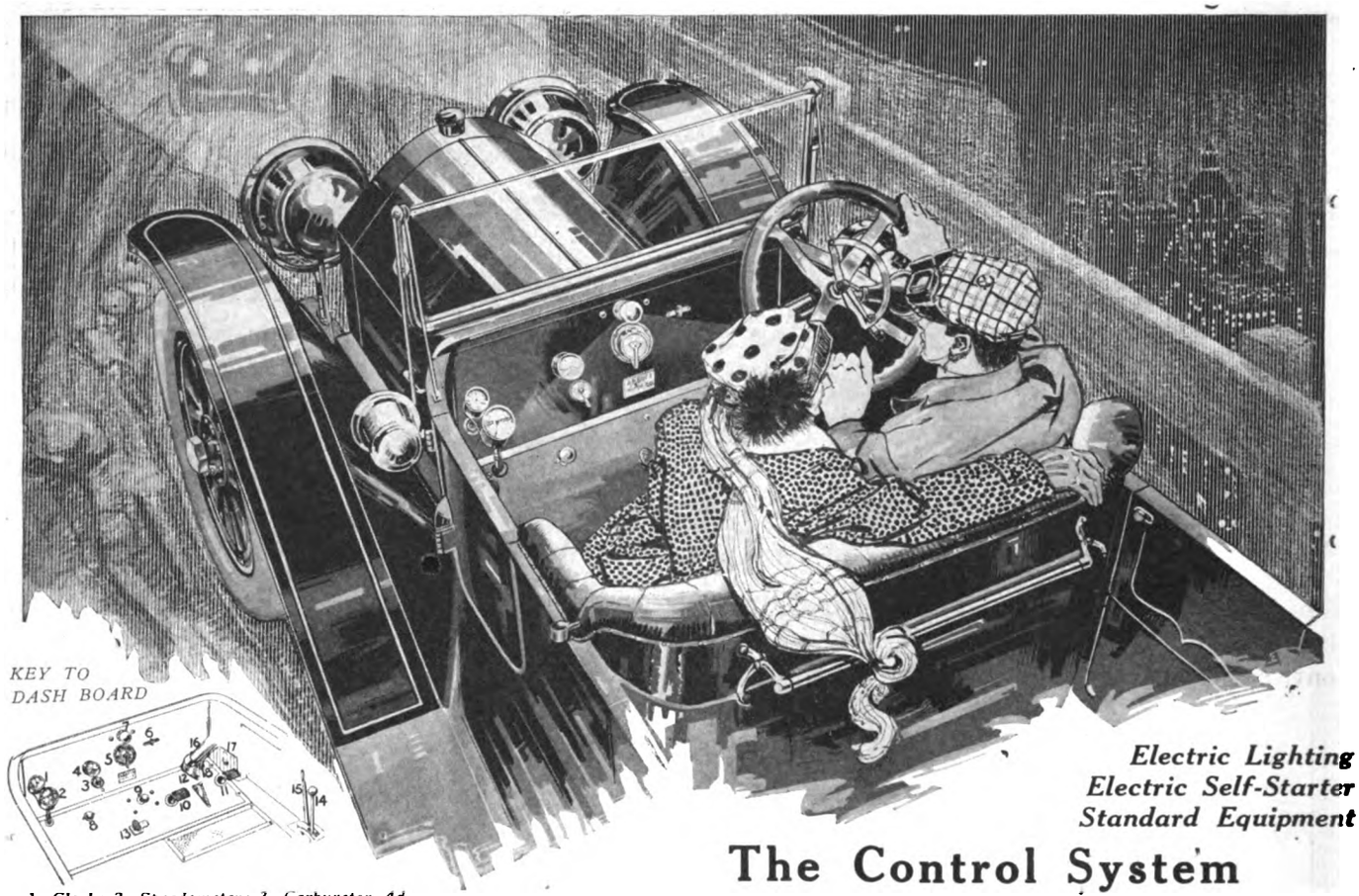
The Type "K" System is especially adapted for use in conjunction with lighting and starting equipment, or as sole ignition in place of the high-tension magneto. We regard it as being fully up to the high standard of merit for which Atwater Kent equipment is known.

Interesting Booklet D and detailed information sent upon request.

Atwater Kent Mfg. Works

4940 Stenton Ave. Philadelphia, Pa.

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1, *Clock;* 2, *Speedometer;* 3, *Carburetor Adjustment;* 4, *Ammeter;* 5, *Ignition Switch;* 6, *Lighting Switch;* 7, *Dash Light;* 8, *Carburetor "Flooder";* 9, *Self-Starter Button;* 10, *Clutch Pedal;* 11, *Brake Pedal;* 12, *Accelerator;* 13, *Muffler Cutout;* 14, *Control Lever;* 15, *Brake Lever,* 16, *Steering Column;* 17, *Dash Ventilator;* 18, *Horn.*

Electric Lighting
Electric Self-Starter
Standard Equipment

The Control System

NO motor cars have more attractive and utilitarian dash boards than the new Abbott-Detroit models.

Every convenience necessary for the **complete control** of the car is at hand. Nothing is left out.

There is even an electric light for illuminating the dash board at night.

THE ELECTRIC SELF-STARTER

The Abbott-Detroit electric self-starter consists of an electric motor built in the side of the crank case and connected with the crank shaft through an independent train of gears enclosed in timing gear compartment of crank case, this construction insuring perfect lubrication.

It is controlled by means of a button on the toe board.

In operation it is simple, positive and reliable—a lady or child can operate it.

As soon as the gasoline motor starts, an over running roller clutch releases these gears and they remain idle while the gasoline motor is running.

This self-starter is not an experiment, not an attempted combination of ignition, lighting and starting, but a real, dependable self-starter, built as a part of the engine and included in the regular equipment.

Call at one of our salesrooms and ask to have its operation explained.

"The demand of the day is that an organization shall be judged by its product and not by what it claims for itself."

Abbott-Detroit advertising for 1913 will be printed in serial form.

This is the fifth of the series. The sixth will appear in the Saturday Evening Post, Dec. 21st; Collier's, Dec. 14th; Life, Dec. 26th; Literary Digest, Dec. 7th.

Copies of previous advertisements sent on request.

ELECTRIC LIGHTING SYSTEM

The electric lighting system is equally complete.

The current is generated by means of a dynamo operated from the engine, and a large capacity lighting battery is provided which takes care of the lights when the motor is standing still.

Thus a sufficient amount of current is always available for lighting all the lamps brilliantly.

A switch on the dash board makes it possible to light all the lamps except the tail lamp from the driver's seat.

The tail light is electrically lighted and is controlled by independent switch integral with it.

An ammeter shows at all times the amount of electric current produced and used. An automatic switch prevents the discharge of the battery through the dynamo when the engine is idle.

Two large black enameled, nickel trimmed electric head lights, two electric side and tail lamps, fitted with Tungsten globes, an Extension auxiliary light which can be used for examining the motor or interior of the car, a dash light for lighting the speedometer, clock, ammeter and other fittings on the dash and foot board, complete the electrical equipment.

CLOCK AND SPEEDOMETER SET

Mounted securely on the extreme left hand side of the dash is a clock and speedometer set which accurately indicates time, speed and total mileage covered.

To the right of this, on the other side of the ammeter, is a carburetor adjustment device.

In addition to the starting button, the foot board carries the muffler cut-out and accelerator throttle pedal. Two large pedals, one operating the clutch and the other the service brakes, are located on either side of the steering column.

Let our dealers show you these cars, or write for advance catalog.

MODELS AND PRICES

34-40	Fore-Door Roadster, 116-inch wheel base	$1700
34-40	5-Passenger, Fore-Door Touring Car, 116-inch wheel base	$1700
44-50	5-Passenger, Fore-Door Demi-Tonneau, 121-inch wheel base	$1975
44-50	7-Passenger, Fore-Door Touring Car, 121-inch wheel base	$2000
44-50	Battleship Roadster, 121-inch wheel base	$2150
44-50	7-Passenger, Fore-Door Limousine, 121-inch wheel base	$3050

Abbott-Detroit

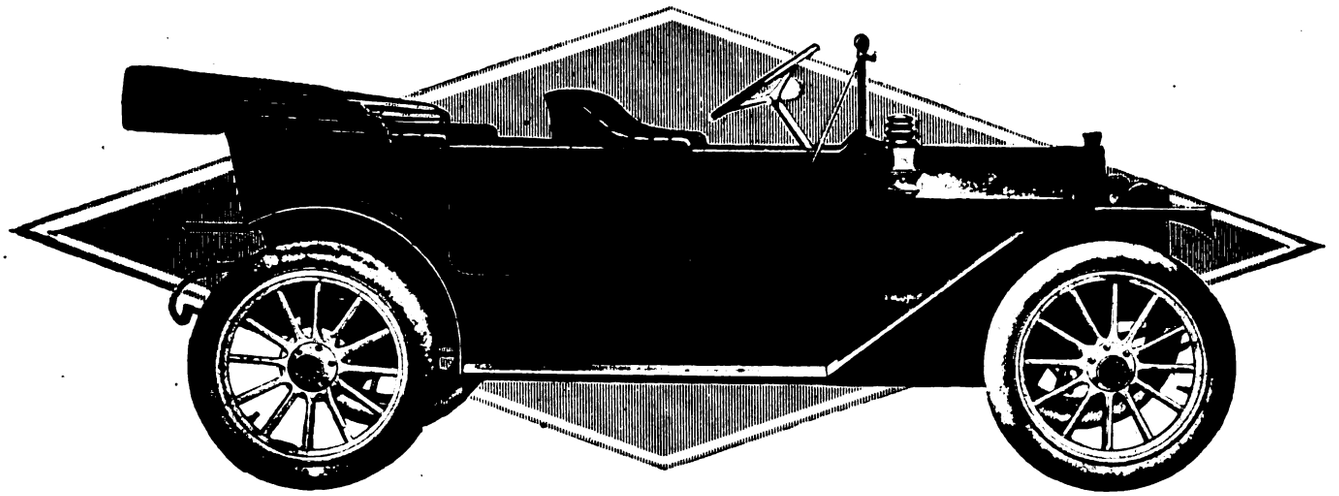
Built for Permanence and Guaranteed for Life

ABBOTT MOTOR COMPANY

607 Waterloo Street

Detroit, Michigan

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COMPLETELY EQUIPPED EMPIRE

—and Now You Get *Class* for $950

Thousands are in the market for a five passenger touring car of moderate size and price. They have avoided buying the average small car because of its usual unsightly appearance and its entire lack of dignity and style. But here is a car that is winning them all—a car not too large yet magnificent in appearance, a car low in price yet with character and dignity heretofore only found in cars of the **five thousand dollar class.**

Empire—"The Little Aristocrat"

THE $950.00, fully equipped Empire 5-passenger Touring Car is daily winning hundreds of this intelligent cultured class. "The Little Aristocrat" has commended itself to these purchasers because of its efficiency, its quality construction, its low maintenance cost, and the refined elegance of its appearance. It will appeal mightily to **you** if you want a car of moderate price and size; **particularly if you demand a real car** instead of an imitation, **and the beautiful** instead of the unattractive.

A year ago there were two thousand Empires in use. Six months ago we planned for our usual healthy increase. But even **we** underestimated the merit and popular appeal of the five-passenger Empire Touring Car. So. early in September **we were forced to establish a second factory** and to triple our output.

Examine "The Little Aristocrat" five-passenger Empire Touring Car and you will understand this amazing growth and success. Judge it from every angle. **Compare the Empire with cars at any price for beauty of design.** The body lines are clean-cut, with flush sides and straight rail. The dash and cowl are of one solid piece of aluminoid steel. **The free running board, graceful fenders and big artillery wheels with big hubs and hub caps lend it distinction.** Large commodious doors, wide seats with luxurious deep cushions assure thorough comfort for five passengers.

Thoroughbred speed, surplus power for any hill, and unusual strength is apparent in every detail of the chassis. Consider the 17-inch steering wheel as against the average small car type of 15-inch. Ponder the safety margin and insurance against accidents in steering knuckles, axles and brakes as big and strong as those used in cars with double its weight. Think of the Empire's 9-inch disc type clutch in place of the customary 5-inch type.

The Empire is sold completely equipped with Mohair Top and envelope, Windshield, Prest-O-Lite tank and Speedometer.

Look up the Empire. Ride in it. Complete information in our Empire "Little Aristocrat" folder. Write for it.

EFFICIENCY DETAILS

Unit Power Plant—Long stroke motor. Cylinders cast in pairs. Valves individually enclosed.
Clutch—9-inch multiple disc (raybestos lined) type.
Transmission—Selective type. Three speeds forward and reverse. Mounted on annular bearings throughout.
Cooling System—Thermo-syphon. Big radiator in conjunction with belt driven fan.
Valves—High carbon valves, fully inclosed, noiseless.
Lubrication—Constant level, force feed.
Ignition—High tension magneto. Set spark.
Steering Gear—Full worm gear type. Irreversible.
Control—Single lever, center control.
Brakes—Service internal expanding; Emergency, external contracting.

Dealers

No need to tell you about the demand for a quality five passenger touring car designed on artistic Empire lines and selling at $950.00. You know the unlimited opportunities in that direction.

Perhaps you do not know how broad a dealer's proposition we make. You ought to.

Write or wire us for information. There is still some open territory.

EFFICIENCY DETAILS

Rear Axle—High-grade construction, with Hyatt roller bearings throughout. Three-quarter floating.
Front Axle—I-beam section drop forged.
Springs—Oil tempered. Three-quarter elliptic rear, semi-elliptic front.
Wheels—Artillery type, 32" Q. D. rims.
Frame—Pressed steel, channel section, dropped, giving low center of gravity.
Body—Aluminoid steel, wood trimmed, four doors, full vestibule, seats with luxuriously buffed leather cushions.
Gasoline Tank—Capacity 12 gallons.
Full Equipped. Equipment includes Mohair Top. Top Envelope, Windshield, Speedometer, Prest-O-Lite Gas Tank, Horn, and Complete Tool Equipment.

EMPIRE AUTOMOBILE COMPANY, Indianapolis, U.S.A.

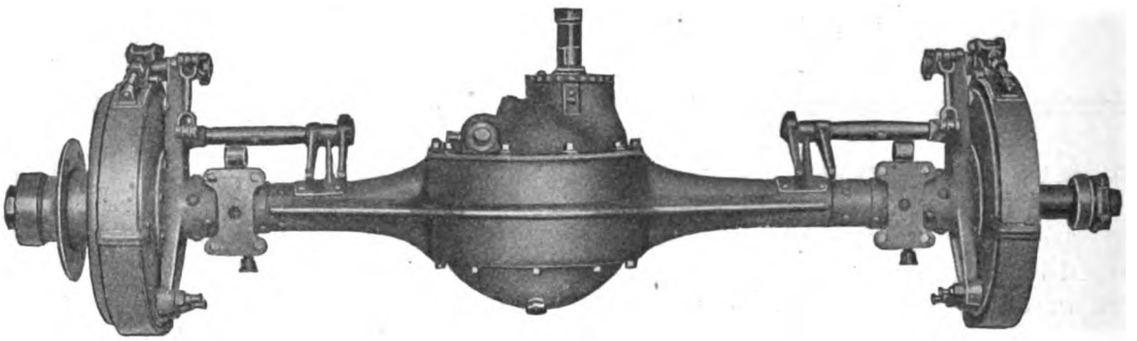
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American

American Axles

American

Give the maximum of efficiency, with the option of bevel or worm drive



Axle efficiency is the basis by which you must measure your car's maintenance expense.

This is especially true of electric vehicles which leave the garage with a fixed quantity of stored energy.

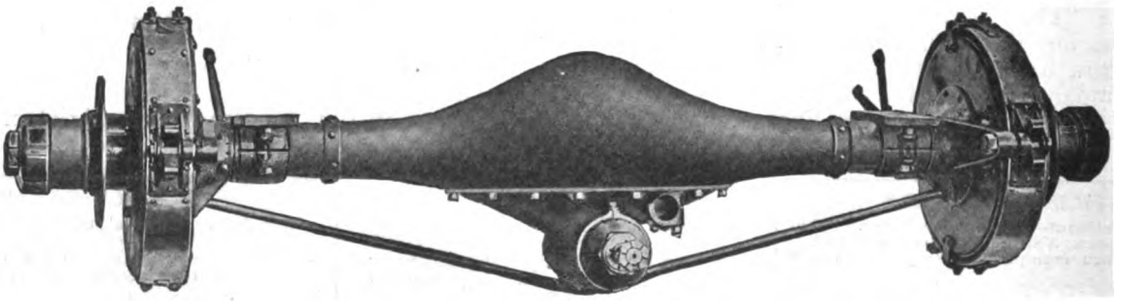
Every unnecessary ounce of friction that must be overcome must be paid for in current.

American Axles, because of their distinctive, patented features—which make for easiest running—assure the maximum of mileage from your batteries.

It is false economy for you to disregard this most important and practical feature.

American Axles now include the Lanchester-Daimler Worm Gear, to which we hold the exclusive rights as axle manufacturers in this country, through the Warner Gear Co., of Muncie, Ind.

They are made with the same superb degree of refinement that characterizes our Bevel Drive axles, well known as the first to be used in electric cars.



THE AMERICAN BALL-BEARING CO.

Edgewater Park and L. S. & M. S. Ry. CLEVELAND, OHIO

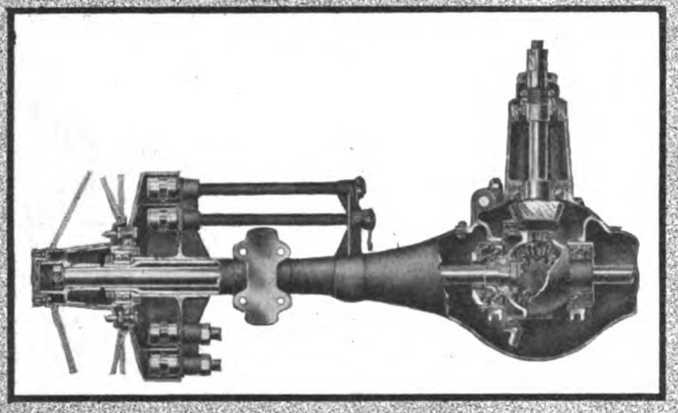
American

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McCUE WI

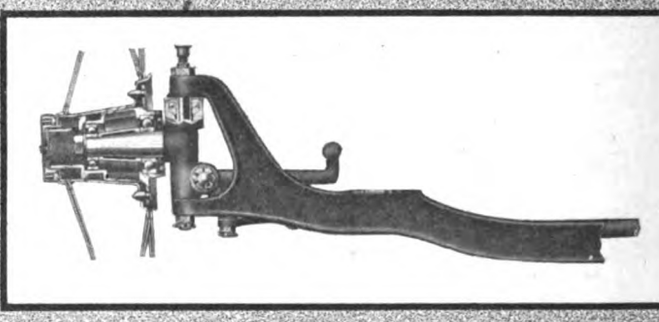


Don't Kid Yourselves, Dealers and Makers

Wire wheels are here to stay just as certainly as you are making and selling cars. You can talk against them all you want or argue anyway you want but the cold, bare facts remain that wire wheels are here to stay. The only question you have to consider regarding the use of wire wheels is whether you will be a leader and equip the product you handle now or whether you will come trailing along after the other fellows have set the pace. That's the only point there is for you, gentlemen, either or both of you, to consider.

We Can Make Immediate Deliveries

Our plant is now equipped to enable immediate deliveries on wire wheels. No manufacturer will be held up one minute who wants to change over to wire wheels tomorrow. And not only can we make immediate deliveries but we can take care of quantity contracts of any size and of whatever delivery dates the manufacturer may elect. This applies not only to those cars which use McCue axles but to cars using any type or style of axle manufactured.



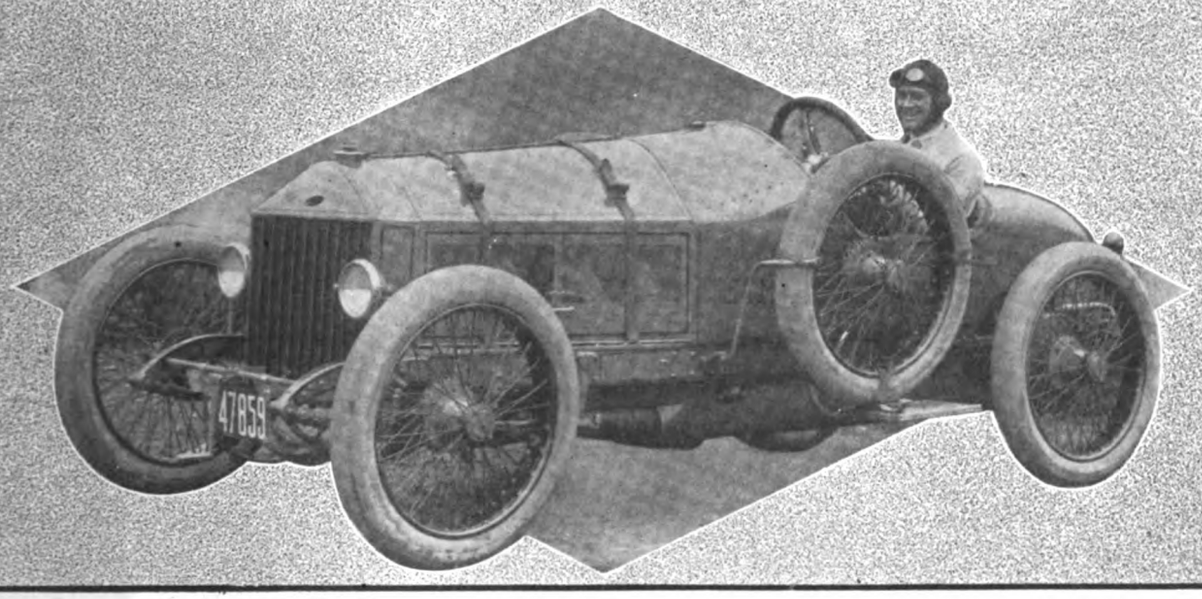
McCUE

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RE WHEELS

HERE IS SOME WEIGHTY EVIDENCE

The recent performance of the Stutz and Mercer cars in going through the Vanderbilt and Grand Prix races with great honor and without one single blow out, of course, is helping to make more converts to wire wheels. In this same connection the performance of the Kline Kar stock racer, "Jimmie," illustrated below, is doing its share to win the people over to wire wheels. This Kline Kar, in Pittsburgh, in classy style "cleaned up" a bunch of professional talent who expected to win everything.



A WINNING COMBINATION

The combination of McCue wire wheels and McCue axles means to the car manufacturer the most up-to-date equipment that money and brains can produce. McCue detachable wire wheels are more easily mounted and demounted than demountable rims and besides they dispense with the tire killing properties which all demountable rims possess—extreme weight at the periphery.

For more information about wire wheels, send for our booklet, "Mileage Plus."

THE McCUE COMPANY, Buffalo, New York

AXLES

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Old Jack Frost

Is packing up his assortment of Cold Weather and is just about ready to pay us a visit



All you have to do is remind your customers of this fact and there will be a brisk sale of **ELECTRIC WARM HAND WHEELS** And don't forget one sale will send many others — sort of an endless chain while the cold weather lasts

One Warm Hand Wheel will sell another. Two will sell four—and so this endless chain of sales will keep up until practically every driver in your territory who handles a car for pleasure or business in the winter months, will equip with this sensible steering equipment.

Maybe it will not look as good to him during the days of October as it will around November first, but the fact remains that **you should have a demonstrating device on your car—NOW.**

The Warm Hand Wheel is of service for six or seven months of the year—there is nothing to wear out about it and so it will last for years—it is a logical, comfort-giving necessity that will keep the hands warm while steering, no matter what conditions of temperature may exist.

The Warm Hand Wheel is easily installed, retails for $15 and offers you a liberal commission on every sale. Every driver who suffers from cold, stiff fingers and so runs grave risks, will get the "Warm Hand" idea and adopt it.

Every moment counts now. The opening of the season is right at hand and you owe it to yourself as a business man to at least investigate this proposition and see what there is in it for you. Don't delay but write today while this matter is fresh in your mind.

THE WARM HAND STEERING WHEEL COMPANY

527 Fifth Avenue

Patented April 23, 1907
Patented Feb. 11, 1908
Patented April 2, 1912
} Other patents pending.

NEW YORK

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HILO DE LUXE BURNER

The Largest Automobile Supply House in America

15—STORES—15

This is a Turn-Down Burner, i. e., you can reduce the size of the flame without carbonizing the burner.

The Greatest Gas Economizer and the Longest Lived Burner made.

Throw away your old-style burners and send us 80 cents for a pair of these.

Price 40 cents each, packed in individual boxes.

DO YOU WANT A COPY OF OUR 1912 CATALOG NO. 22?

The Most Complete of the Kind. **Mailed Free on Request.**

CHAS. E. MILLER

Home Office: 97-99-101-103 Reade St., New York City

MANUFACTURER, JOBBER, EXPORTER AND IMPORTER

Order From Nearest Branch, Address Chas. E. Miller.

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ATLANTA, GA.—66 Edgewood Avenue.
PHILADELPHIA, PA.—318 North Broad St.
NEW ORLEANS, LA.—601-603 Baronne St.
NEWARK, N. J.—274 Halsey Street.
SPRINGFIELD, MASS.—Bridge and Dwight Sts.

Glide

In 1917—Five Years Hence

the 1913 GLIDE will still be a **modern**, serviceable car. Why? Because the present GLIDE leaves but very little that can possibly be improved upon.

It is far ahead of many 1913 cars—and **no** car is **leading** the GLIDE in high-class materials, construction and all of the newest equipment.

The 1913 GLIDE is **electric lighted**—simply turn a button and all lamps are on!

The GLIDE Motor-Driven Tire Pump eliminates drudgery. Also **saves your tires** by keeping them fully inflated at all times to any desired pressure.

Electric **Bull's Eye** Side Lamps are **sunk in dash**, eliminating rattling, minimizing breakage and adding to the classy appearance.

The GLIDE Self-Starter is **sure** of a spark—**investigate** and learn **why** the GLIDE starter is **efficient.**

Simple center control, left side drive, demountable rims, irreversible steering gear—and in fact all the newest features of known worth—establish the "class" of the 1913 GLIDE.

Make a memo—right now—to write us for detailed description of the entire GLIDE line.

"36-42" Features

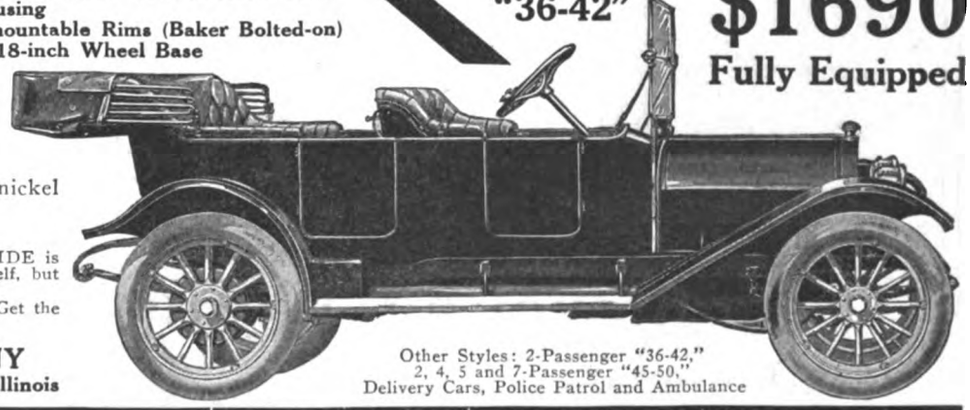
Automatic Dynamo Lighting System
Motor-Driven Tire Pump
Unit Power Plant
Long Stroke Motor with *enclosed valves*
Center control
Left Side Drive
Bull's Eye* Electric Side Lamps *Sunk in Dash
Electric Headlights and Tail Lamp
An *Efficient* Self-Starter
Floating Rear Axle with Pressed Steel Housing
Demountable Rims (Baker Bolted-on)
118-inch Wheel Base

You can't get GLIDE quality, equipment and service in any other car at the GLIDE price. Make us prove it! You can pay **more** and get **less.**

Our price includes complete equipment, as follows: Dynamo, Mechanical Tire Pump, Self-Starter, Mohair Top, Top Boot, Glass Front, Electric Headlights, Side Lamps and Tail Lamp, Demountable Rims and One Spare Rim, Model B Stewart Speedometer with Grade Indicator, Spare Tire Carrier. Full quota of tools and jack, all nickel trimmings.

5-Passenger "36-42"

$1690
Fully Equipped



Other Styles: 2-Passenger "36-42," 2, 4, 5 and 7-Passenger "45-50," Delivery Cars, Police Patrol and Ambulance

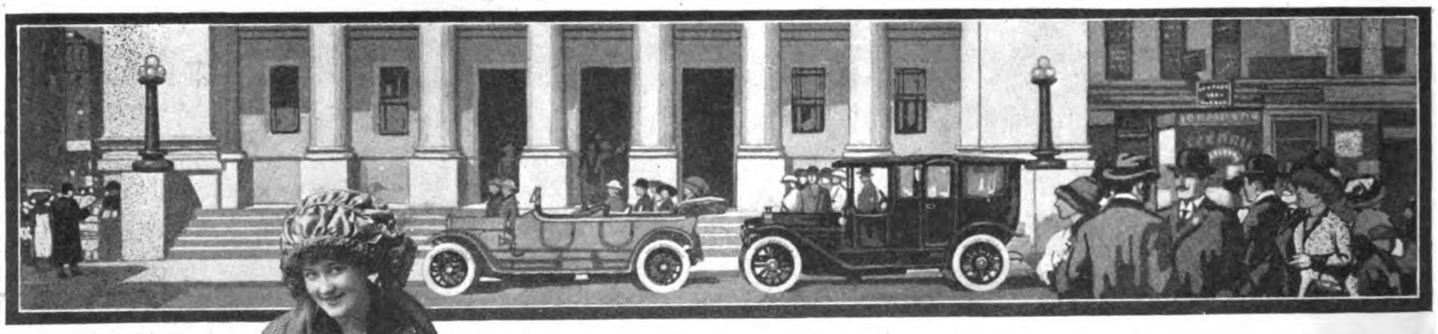
Dealers

The extraordinary quality and equipment of the GLIDE is apparent to the most experienced. It not only sells itself, but every car sells others.

Write for our attractive Dealer's proposition today. Get the GLIDE agency **now**, while there is still open territory.

THE BARTHOLOMEW COMPANY
220 Glide Street **Peoria, Illinois**

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Kelly - Springfield Tire Company
20 Vesey St.
New York

Branch Offices in
New York
Chicago
Philadelphia
Boston
St. Louis
Detroit
Cincinnati
San Francisco
Los Angeles
Cleveland
Baltimore
Washington
Seattle
Atlanta
Akron, O.
Buffalo

Boss Rubber Co.
Denver, Colo.
Appel & Burwell
Rubber & Tire Co.
Dallas, Texas
Todd Rubber Company
New Haven, Conn.
Bering Tire & Rubber Co.
Houston, Texas
The Hearn Tire & Rubber Co.
Columbus, O.

Kelly-Springfield
Automobile Tires

As a matter of fact, dependable tires are the basis of real automobile usefulness.

Kelly-Springfield road mileage is a few thousand miles higher than the average. That reduces the cost of the tire.

The easy resiliency of Kelly-Springfield Tires is one phase of our argument. But staunchness and durability, born of the best rubber composition, skill and the incentive to make good tires better, offer a reason even more convincing—wear.

When you buy Kelly-Springfield Tires you are not experimenting. We have done that for you.

Kelly-Springfield Tire Company, 20 Vesey Street, New York

Care and Repair of Motorcycles



A TROUBLE SAVER
FOR THE
MOTORCYCLIST

Price 25 Cents



Bicycling World Company
1600 Broadway NEW YORK

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The Niagara Self-Starter



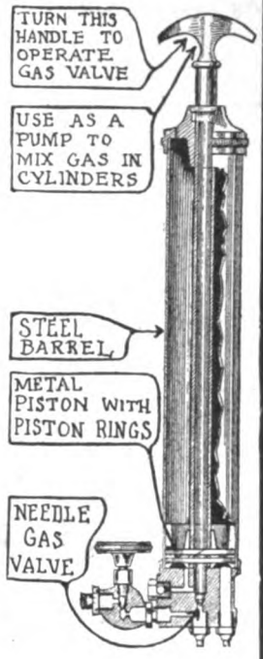
is guaranteed for two years and will start your car every time you get a spark in your cylinder.

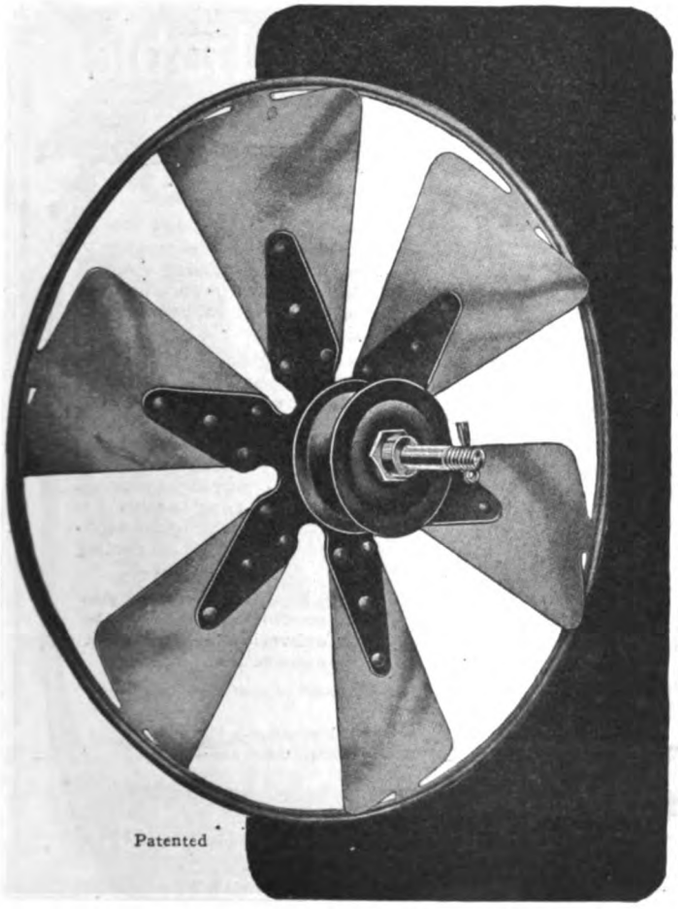
The Niagara Self Starter maintains its popularity and increased demand solely on its merits as an efficient self starter. It is as simple as it is efficient. It does not use the **Gas** alone, which will soot your spark plugs, but mixes the gas with **Pure Air** which is forced into the cylinders

The NIAGARA SELF STARTER has a compressor made of seamless drawn steel tubing with a cast iron piston and two cast iron piston rings—a distinct improvement on the old leather plungers which wear out under the influence of the acetylene gas. Durable, efficient and reliable. It never wears out, has no maintenance expense, and is always on the job.

FACTORIES and AGENTS should write us for our proposition.

NIAGARA SALES CO., Buffalo, New York





Better Fans

We positively will give you a superior Radiator Fan. The Sparks-Withington Co. are the largest and most experienced Fan manufacturers. Recently added facilities now brings our capacity to

1,000 Fans Per Day

Standard sizes for all classes of cars.

THE SPARKS-WITHINGTON CO.
Jackson, Michigan and Walkerville, Canada

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Mr. Automobilist:

Your tire maker is very anxious to impress upon you the importance of

Tires Inflated to the Right Pressure

He insists that this is tire economy and

Saves You Money

How do you know what pressure you have in your tires? A

SCHRADER
UNIVERSAL
Tire Pressure Gauge

(Trade Mark Registered in U. S. Patent Office)



(Patented March, 1898—Other Patents Pending)

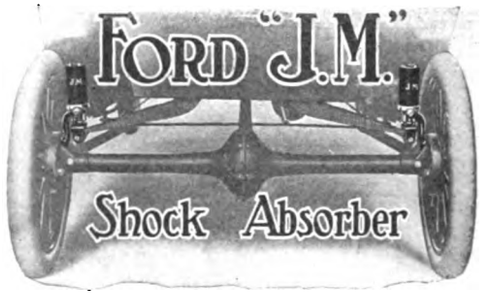
will tell the exact pressure in your tires at any time, day or night, by simply holding this Gauge to your Valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the Gauge can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the Indicating Sleeve can be pushed back into the Gauge with your finger. No catches or snaps to operate or get out of order. This Gauge is 2½ inches long over all, short enough to apply easily to the smallest diameter of wheel and can easily be carried in the vest pocket or the change pocket of your trousers.

Price $1.00 Each
Ready for Delivery Now

Guaranteed Simple and Absolutely Accurate

Can be obtained from all tire manufacturers and the dealers, or

A. SCHRADER'S SON, Inc.
28-32 Rose Street New York City



makes it possible for the Ford Car owner to enjoy the same luxurious ease and comfort that the highest-priced car gives.

By serving as a perfect auxiliary to the springs, by avoiding all tendency to lock or arrest their action, the **Ford "J. M." Shock Absorbers** give an added riding comfort never before possible.

By holding the rear wheels to the ground, they insure continuous traction and cut down wear and tear on tires and car.

Booklet "W" tells why thirty-five dollars invested in **Ford "J. M." Shock Absorbers** makes your Ford Car the equal in riding qualities of a five-thousand-dollar one. Write for it **to-day.**

THE "J. M." SHOCK ABSORBER CO.
Main Office and Factory
210 South 17th Street, Philadelphia, Pa.

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Chicago, Ill., 1509 Michigan Ave.
Boston, Mass., 222 Eliot St.
Buffalo, N. Y., Teck Building
Rochester, N. Y., 111 Monroe Ave.
Detroit, Mich., 1001 Woodward Ave.
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DEPENDABILITY and Reliability are inseparable from Quality. In steering gears, Reliability is of vital importance. It is not a matter of money—it's a matter of safety.

Warner Steering Gears, Mr. Manufacturer, are your best pledge of Safety, which means a Big Asset in your business. You are justified in using them by our eight year old reputation for building the highest grade steering gears produced.

Besides, we give you prompt and dependable deliveries, service and satisfaction. Write.

We modify our designs to meet your detail requirements, or build to approved designs on seasons quantity specifications.

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All Tire Manufacturers will only guarantee their product when filled with air at the recommended pressure.

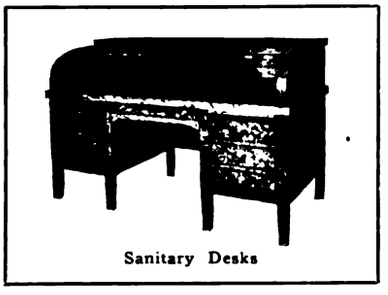
GET A 1912 TWITCHELL Positive Lock Stop AIR GAUGE

With it you can get more mileage out of the Tires, because you can always keep them at right pressure.

The Twitchell Gauge is Tire Insurance for a dollar—Order one from your dealer or from us direct.

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INTERLOCK
INNER TIRES
Stop Tire Troubles

INVESTIGATE AND LEARN WHY SO MANY THOUSANDS OF MOTORISTS ARE DISCARDING INNER SHOES, RELINERS, FILLERS, AND OTHER MAKESHIFTS FOR INTERLOCK INNER TIRES—AND WHY INTERLOCKS ARE HANDLED AND RECOMMENDED BY THE BEST SUPPLY DEALERS AND TIRE HOUSES ALL OVER THE COUNTRY.

One weak point of the automobile to-day is that you can't depend on its tires. INTERLOCKS revolutionize this condition by making your tires so strong that blowouts become practically impossible. INTERLOCKS save half your tire expense—save repair bills—double your mileage—prevent punctures and completely free you from all fear of tire trouble.

What INTERLOCKS Are.—The INTERLOCK is a complete inner tire (not an inner shoe) which is placed between the outer casing and the inner tube to strengthen the outer casing and protect the tube. It is the only reinforcement which is locked by air pressure to the rim and which becomes an integral part of the tires, and, therefore, cannot heat or chafe. Even if the tire is broken the INTERLOCK will hold.

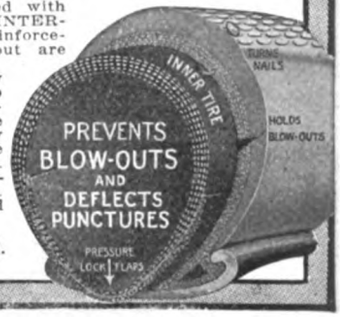
INTERLOCKS Insure Safety.—You know that the sudden blowing out of a tire may easily ditch any car when going at fair speed—the safety of INTERLOCKS should appeal to you.

Reduce Your Tire Expense.—You can have the tires on your new car equipped with INTERLOCKS if you specify them. INTERLOCKS are the only perfect tire reinforcement. They cost a little more but are cheapest in the long run.

For your present car—ask any dealer or supply house, or write to us for the name of your nearest supply source. INTERLOCKS will make any fairly sound tire more than carry you through the season. They are easily placed and are made in all sizes.

We Want Dealers Everywhere.—Write for Special 30 Day Offer, Booklets, Prices, Records of Road Tests and Testimonials of users.

DOUBLE FABRIC TIRE CO.
600 W. 9th St. Auburn, Ind.



QUALITY
PLUS
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Advanced Manufacturing Processes
Guaranteed Materials and Accuracy of Finish
Greatly Increased Production Capacity

are three of the four reasons why New Departure ball bearings will be used more than any other in American made cars sold in 1913.

THE FOURTH REASON:

Shipments when you want them—eight acres of machinery busy twenty-two hours a day.

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Since the introduction of BENZ cars to the motoring public of America no car has attained such world-wide supremacy as to its construction, standing up quality, and material. The new type of 35 and 50 H. P. BENZ models are the last word in automobile construction.

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Croxton cars incorporate all of the features for which the buyer looks in the new season models. Write for catalog and agency details.

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REG. U. S. PAT. OFF.

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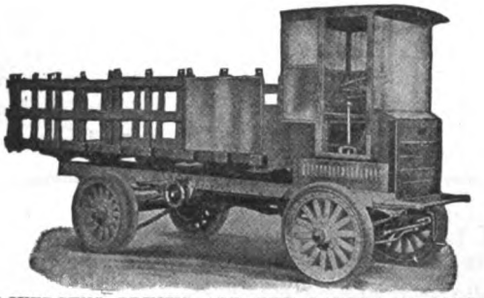
Great Dealer Proposition for those who want to handle a device that will increase engine efficiency, save fuel and keep the engine clean. Retails for $3. Big commission. Write today.

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Lauth-Juergens Trucks are Delivery Insurance

QUALITY DURABILITY
ONE, TWO AND THREE TON CAPACITY



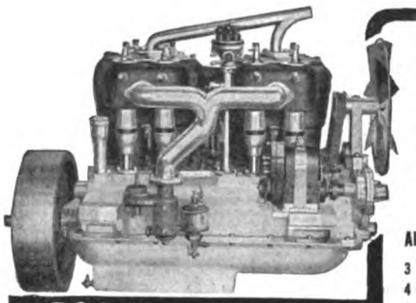
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ALL 4 CYCLE — 5 TYPES

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We could build them cheaper
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(Guaranteed 5,000 Miles)

Get These Tires

Tried and proven, **AJAX Tires** represent a value heretofore considered impossible in tires. They show what can be done by modern facilities, long experience, honesty of purpose and the genius for taking pains.

While **AJAX Tires** are not indestructible, being made of fabric and rubber, they give greater uninterrupted service than any other tires on the market and are designed and built for those who want the very best tires that can be made.

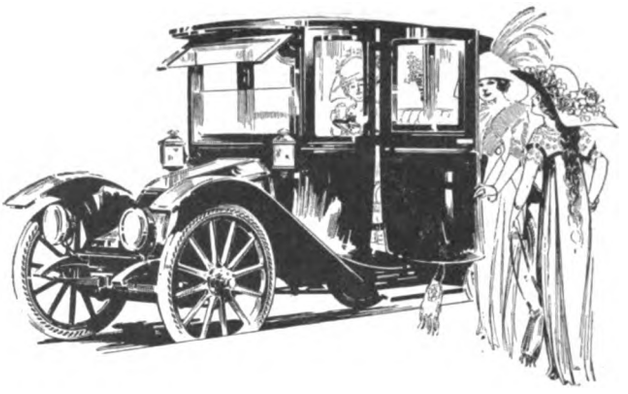
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Have New Foot Control

This is the greatest single improvement in electric motor car construction that has been made during the past ten years.

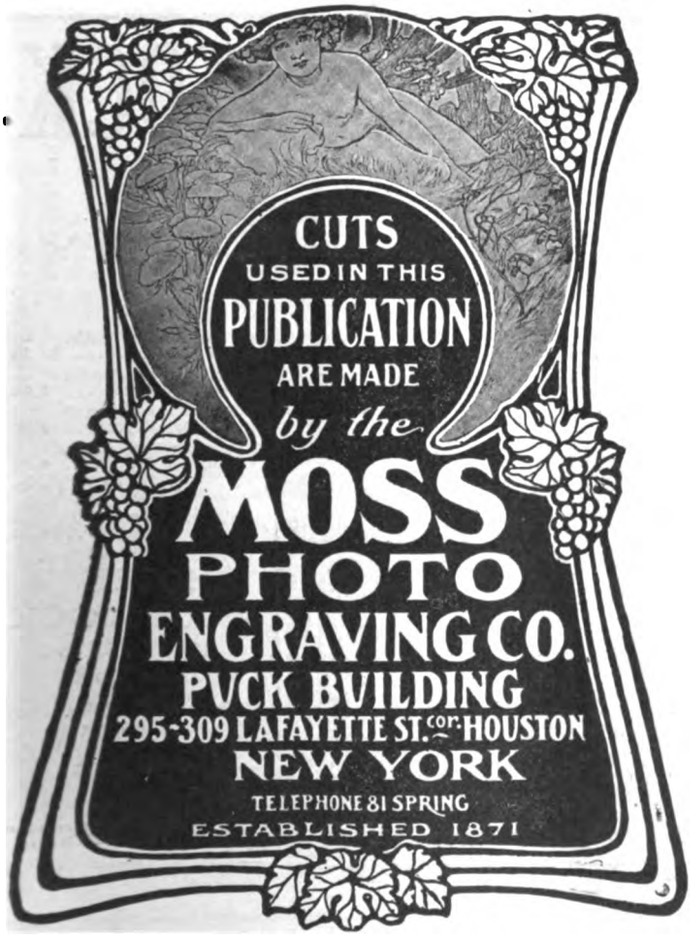
A touch of the foot on the pedal shuts off the power and applies the brakes.

Our Catalog Explains this new system of foot control—also many other exclusive new Argo improvements. Write for it.

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You may have the best Automobile and equipment, but nothing is so ***necessary as perfect lubrication.***

Never *use any but the* ***best*** *Oil. You probably now use our*

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If not, you hardly know ***real*** *satisfaction in driving your car.*

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If you cannot get it ask for sample or better still send us an order.

Freight paid on 10 gallons and up. Satisfaction guaranteed.

Yours truly,

The Reliance Oil & Grease Co.

Established 1888

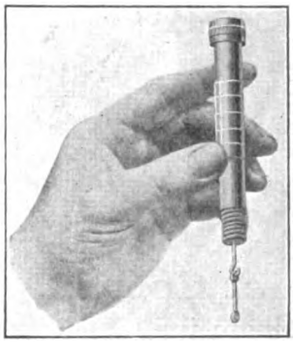
Agents Wanted for Exclusive Territory

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Illustrating the Superiority of the Flexible Shaft of the

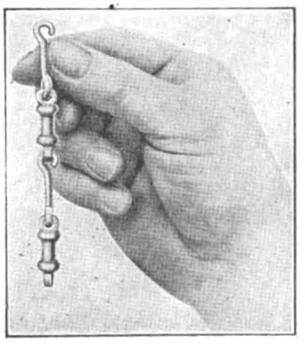
CORBIN-BROWN SPEEDOMETER

"The Speedometer of Permanent Accuracy"



Plain Link Shaft

Consists of a succession of plain links. No solid, smooth bearing to run on. Rims on the eyes of the links. Runs unsteadily and therefore affects accuracy of speedometer.



Corbin-Brown Shaft

Solid link between the eye-links. Solid link gives smooth bearing. Friction minimized. Almost impossible to break. Any one can replace new links.

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DISTRIBUTORS: New York Philadelphia Chicago

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Exchange Your Old Magneto for a New Remy

IT will cost you practically no more than what you will be forced to pay out for constant repairs on your present ignition system. A new Remy will give your car new life. Here is our exchange proposition:

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Allowance made for any make of Magneto.

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Anderson, Indiana

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Model K2
Price $75

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We now have 360 rooms with 265 baths.
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Long-stroke motor, 3¼ x 5½ inches. Enclosed valves. Three bearing crank shaft. Unit power plant. Multiple Disc clutch. Three speeds forward. Sliding gears. Full floating axle. Center control. Zenith carburetor. Bosch magneto. 106-inch wheelbase. 32 x 3½ inch tires. Quick detachable rims. Mohair top with envelope. Jiffy curtains. Windshield. Rear shock absorber. Prest-O-Lite tank. Gas headlights. Oil side and tail lamps. Tools—horn. Trimmings, black and enamel. Standard color, black. Magneto and camshaft driven by silent Coventry chain.

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Chassis and specifications same as Touring Car. Large turtle back dust proof compartment for extra accessories, tires and baggage.

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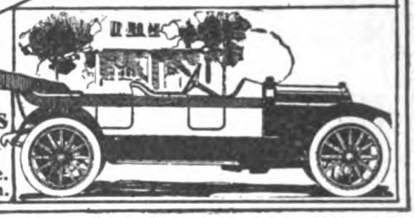
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THE TOURABOUT LINE

Four-40, Tourabout, 128-in. wheel base . $1450
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Electrically Self-Started and Lighted

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Six Models 40 and 50 H. P. Fully Equipped

Model 40—5 Passenger, Fore Door Touring Car.

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Model 52 — Roadster type — all with the new "T" head, 5 inch bore, 6 inch stroke motor. 50 H.P. $3400

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Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

CARTERCAR COMPANY, Pontiac, Michigan

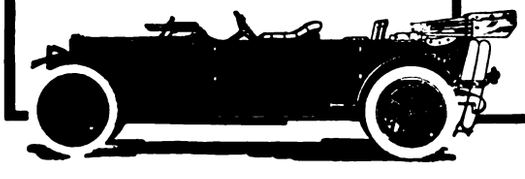
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Every part built in the KisselKar plant, which is equipped with every facility for economical manufacture. All KisselKars have extra liberal wheelbase and roomy tonneaus unsurpassed by any car at any price for comfort and capabilities. Write for catalog.

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"Forty"
"Fifty"
60 H.P. "Six"

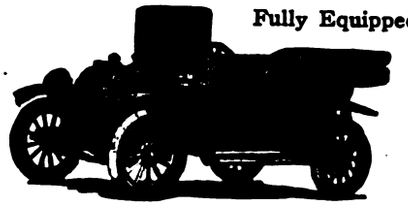
KisselKar prices include full equipment—self-starter, top, windshield, demountable rims, speedometer, electric lighting equipment, shock absorbers, etc.



The Detroiter—$850

Fully Equipped

Five Passenger Touring Car



25 H. P. Long Stroke Motor

Enclosed Valves, Three Point Suspension, Unit Power Plant, Platform Rear Springs, Full Floating Axle, Left Hand Drive, Center Control, Drop Frame, Large Tires, Complete Ball Bearing Car. Write for specifications.

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Costs Little to Buy—Costs Nothing to Operate

No Battery—No Wire—No Bulb—No Motor to break down or fail to work.

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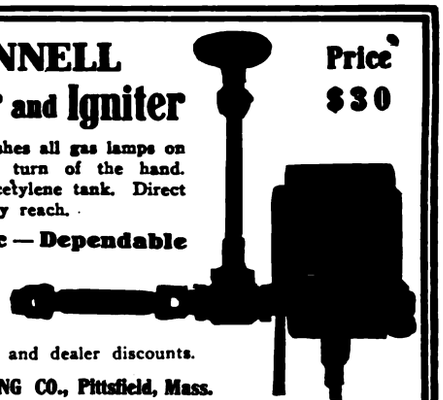
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SPARK PLUGS

Used as standard equipment by eighty-eight manufacturers.

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THE GRINNELL Gas Controller and Igniter Price $30



Lights, dims and extinguishes all gas lamps on the car through a simple turn of the hand. Coupled to valve-stem of acetylene tank. Direct control. Always within easy reach.

Convenient—Safe—Dependable

Every car owner in your vicinity, Mr. Dealer, will be interested—it's up to you to show them—and sell them. Write for booklet and dealer discounts.

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Sole Licensed Manufacturers for the United States

REPUBLIC

STAGGARD TREAD TIRES and BLACK-LINE RED INNER TUBES



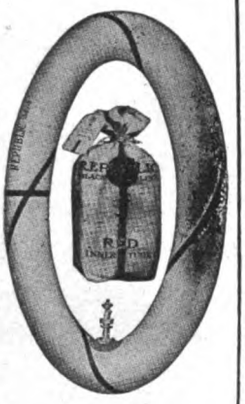
Republic Staggard Tread Pat. Sept. 15-22, '08

Motorists who use Republic Staggard Tread Tires will tell you that they—Prevent skidding, make quick starts and short stops easy. Give double mileage because of the full-thickness tread under the studs.

Most Widely Imitated of All

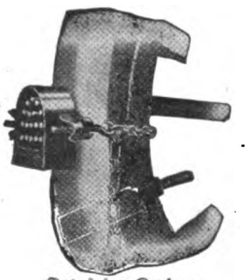
We guarantee the Republic Black-Line Red Inner Tube to be as nearly perfect as a tube can be made—and is a fitting companion for the splendid Republic Staggard Tread.

The Best Tube Made

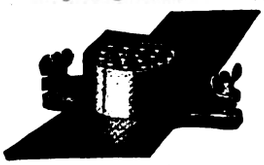


The Republic Rubber Co.

Youngstown, Ohio



Repairing Casing



TIRE CUTS ruin casings. They admit moisture to the carcass, cause the fabric to rot and weaken, grow larger end in blowouts.

You can repair **CASINGS** and **INNER TUBES** anywhere in 15 minutes, better than a Repair Shop can do—and for *one cent.*

Universal Auto-Vulcanizer

Patented

A practical vulcanizing outfit complete, with enough repair gum to make 40 patches. It weighs 3 pounds and can be carried in the tool box. **Simplest and most satisfactory device for eliminating tire troubles that has ever been devised.**

Absolutely automatic. Place the patch—attach the Vulcanizer—put in the gasoline—light it. No further attention required. In 15 minutes the job is done.

It *can't burn, scorch* or *injure* tube or casing. It *can't* get out of order. It *can't* fail to do its work. So simple, anyone can operate it. The Universal Auto-Vulcanizer saves its cost a *hundred times* over in trouble and expense.

Price Complete, **$4.00** Ready for Instant Use

Guaranteed Satisfactory or Money Refunded

ADAMSON MFG. COMPANY, East Palestine, Ohio

Demand and Insist Upon Getting

TRADE MARK **Raybestos** REG. U.S. PAT. OFF.

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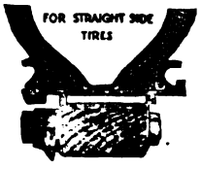
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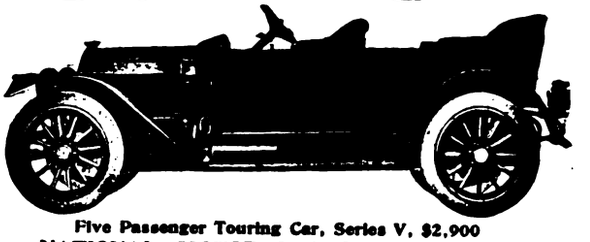
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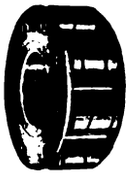
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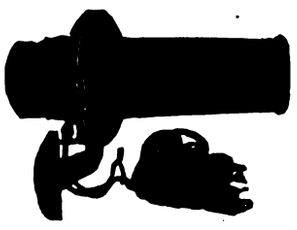
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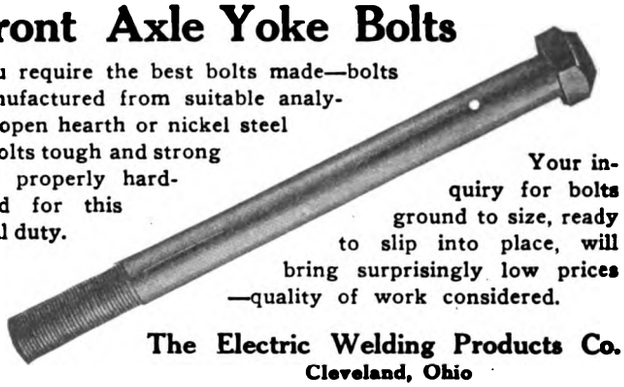
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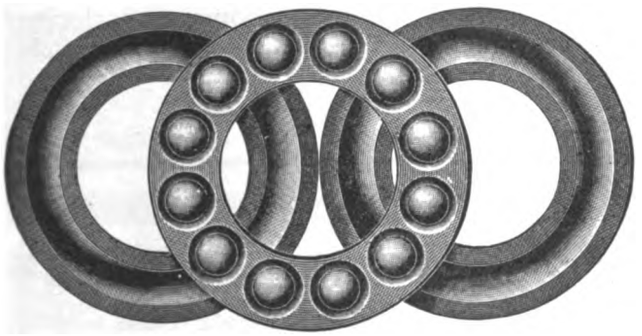


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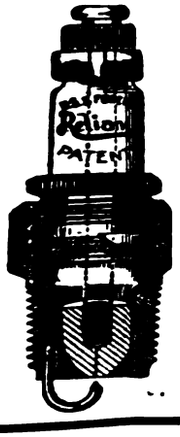


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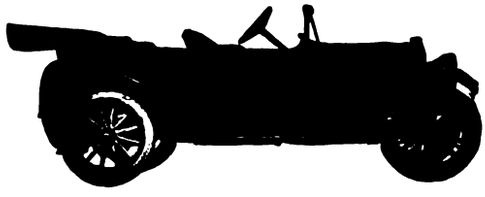
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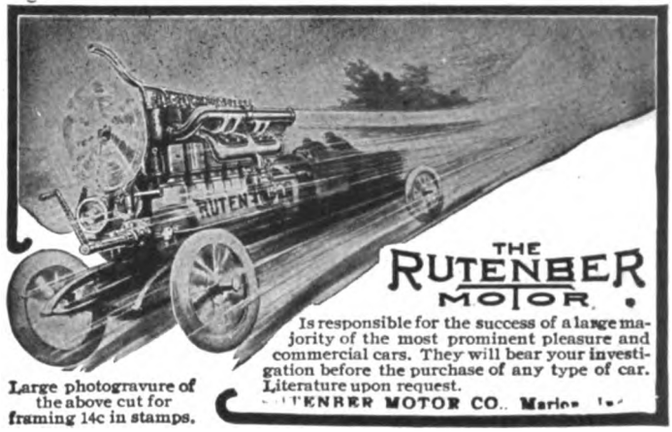
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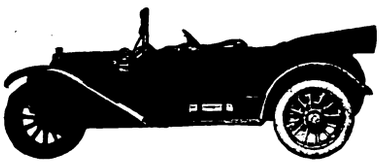
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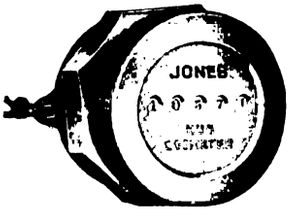
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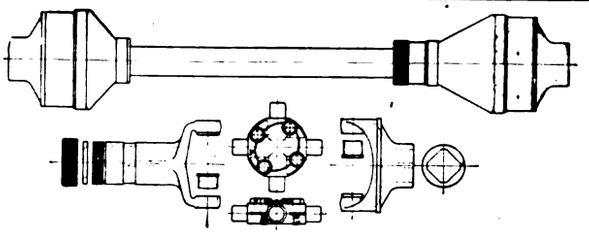
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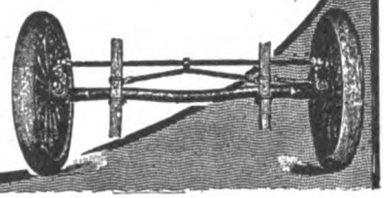
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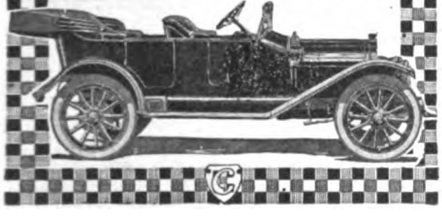
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Great Ease of Riding — Carburetor Dash Adjustment
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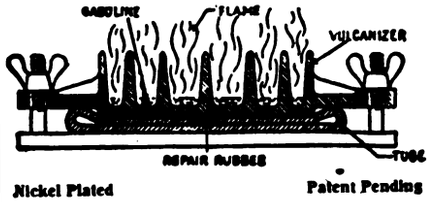
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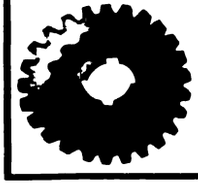
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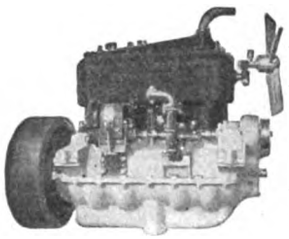
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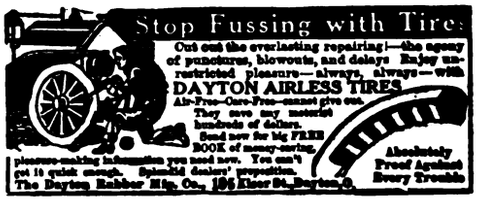
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Detroit, Mich.
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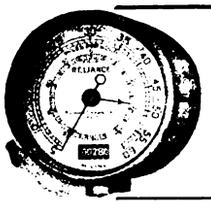
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A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

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OF EVERY DESCRIPTION
SAMPLES AND PRICES ON REQUEST
L. J. MUTTY CO., Boston



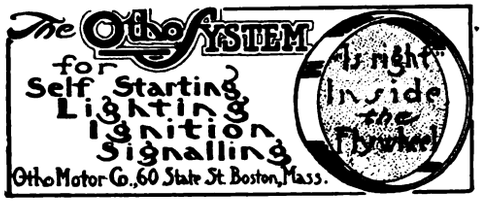
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"The Speedometer of Quality"
Special features that eliminate speedometer troubles. Send for the booklet.
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No matter how careful a driver you may be, you cannot prevent skidding or slipping on wet, muddy snow-covered roads or on icy, slippery greasy pavements unless you equip your car with Weed Chains.

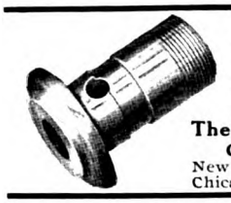
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Because They Creep

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Fiat has won more great racing victories than any other automobile—yet it is in no sense an exclusive racing car.

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1st. They have proven, as no other medium could prove, the correctness of **Fiat** Design, the strength of **Fiat** Materials, and the thoroughness of **Fiat** Construction.

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The stresses and strains of a hard road race or endurance contest are many times greater than would be met in years of average touring over roughest roads. The cars produced by F·I·A·T at Turin and Poughkeepsie are the final expression of these racing tests as applied to every-day uses.

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PRICES

6 Cyl. 50 H.P.	4 Cyl. 55 H.P.	4 Cyl. 35 H.P.
$5,000	**$4,500**	**$4,000**

When Writing Address Sales Dept. D

Turin, Italy **F·I·A·T** **Poughkeepsie, N. Y.**

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You have formerly used chains—under protest. They are unhandy, noisy, short-lived, expensive.

You would like to get the results without the added cost of chains. If you found something that saved more than its cost by REDUCING tire wear (instead of increasing it), you would think mighty hard before turning it down.

Here It Is →



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The rest of the tread is the same as before. Same waterproof, always pliable chrome leather base; same side springs to prevent loosening and chafing; same rows of hardened rivets between the special high rivets.

Just put the Double Grip Treads on your tires and leave them on all winter! They give traction anywhere, and you are saved the nuisance of putting on and taking off chains.

Save your tires, your purse, and your car by using the new

Double Grip Woodworth Treads

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New York Store, 1608 Broadway

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Economizes Fuel

Triplex

Increases Mileage

Triplex

Promotes Flexibility

Triplex

Prevents Back Firing

Triplex

Readiest Seller on the Market

A Dirty Motor Is a Short Lived Motor

Nothing tends to lower the efficiency, flexibility and sweet running qualities of a motor quicker than an improper mixture. Faulty carburetion is the prime cause of carbonization. Carbon clogged cylinders, sooty spark plugs, sap the ambition out of a motor, shorten its service.

Loss of COMPRESSION is caused from DIRT taken into cylinders through CARBURETOR. The TRIPLEX MAKES IT AN IMPOSSIBILITY for ROAD DIRT to get into the cylinders. DIRT OR DUST acts as a grinding material and causes loss of compression by grinding down PISTON, RINGS, AND PITTING OF VALVES.

The Triplex Makes Imperfect Carburetion a Mechanical Impossibility

The TRIPLEX is a device placed between the MANIFOLD AND CARBURETOR TO BREAK UP the mixture—the fuel.

The TRIPLEX will EQUALIZE the most UNEVEN mixture that leaves the carburetor—make it uniform throughout.

Operating as it does on a tried and proven scientific principle, the TRIPLEX insures a mixture which will burn CLEAN to the last atom. It is a physical impossibility for a bit of live gas to remain unignited. BLACK SMOKE is emphatically done away with—CARBONIZATION forestalled.

A TRIPLEX WILL PAY FOR ITSELF IN TWO MONTHS. By utilizing every drop of gasoline to its full capacity, the TRIPLEX makes a saving of over 25% per gallon. It gives you 5 gallons of FUEL at a cost of FOUR. It makes high-proof gasoline out of low.

Furthermore, it increases power proportionately. The full cylinder charge is ignited every time—the maximum power delivered at the point of highest efficiency. Because there is no fuel waste, there is no power waste. A TRIPLEX is a double economy—it INCREASES power at the same time it DECREASES fuel consumption.

INSURE YOURSELF AGAINST BACK-FIRING WITH A TRIPLEX. Another advantage it possesses is that it prevents FIRING a car due to the fact that any FLAME is cut off in trying to go through the TRIPLEX. The principle is the same as the non-explosive feature of a miner's gauze lamp.

Further advantages are that a TRIPLEX makes starting easier regardless of temperature or atmospheric conditions, and stops suction of live gasoline when the motor is cold.

The TRIPLEX can be readily attached by anyone in one-half hour's time.

THE TRIPLEX IS GUARANTEED. The TRIPLEX is guaranteed to do all we claim for it, or your money back. Therein lies YOUR protection. For further information write us.

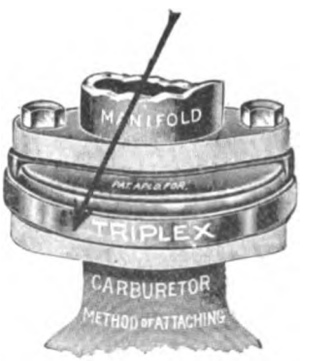
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To Be Had at All Dealers, or Direct on Receipt of Price

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Talks *on* Selling Automobiles

No. 2

Analyze your good-will.

You will find a certain percentage has automobile-buying surplus capital behind it, more has not.

The first makes the wheels of your business go round. But the surplus-capitaless kind, like an empty gasoline tank, gets you nowhere.

If you could extend credit—if only to business and professional men who need cars as practical working assets, can afford them and would meet their obligations—you could capitalize almost 100 per cent. of your good-will and do double the business. But you can not do a credit business. Not in the automobile trade where every transaction means $500 or more.

Right here we step in. Our business is financing sales of automobiles of all kinds to responsible people who can afford them but lack ready money. People who are in pretty much the same position you are in, having their funds tied up as active capital.

Your commission, and the cash for the manufacturer, are paid on delivery of the car. And the customer remits to us under the easy payment plan, with legal interest—not "installment house" rates.

You assume no risk. And we only extend Credit Where Credit is Due.

Write today for details of how we can help you capitalize the rest of your good-will and double your sales.

Harman-Yount Co.

Kenton Harman, President

1788 Broadway, New York

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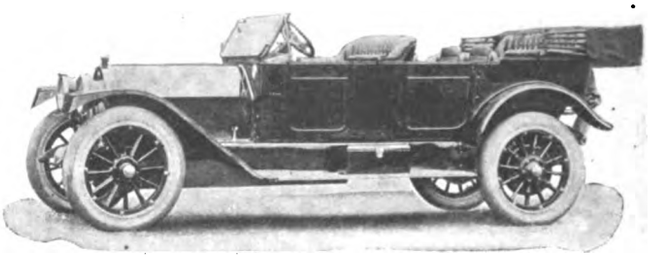
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Willys-Overland Co., The..... 4

"The Car of Quality"



Kline Kar Model 6-60, Touring, $3500

DEALERS

YOUR experience with other cars should tell you that it does not pay to handle a line that constantly worries the life out of you with complaints from the user, who has trouble with the machine. This user knows now that he is better off when he buys a car of quality in the first place, even though he must pay a little more for it, and he will soon begin to demand such a car of his dealer.

It is up to you to have the car in your line when he calls. The Kline Kar will answer all the requirements this prospect may impose and more.

Prices $1850 to $3500
(Fully Equipped)

Get Our Proposition

Kline Motor Car Corporation
YORK, PA. **RICHMOND, VA.**

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$985 Overland $985

Completely Equipped

Self-Starter
30 Horse-Power
5-Passenger Touring Car
110-Inch Wheel Base
Timken Bearings
Center Control
Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision Wind Shield
Prestolite Tank

High-priced feature No. 1

Popular-priced makers consider semi-floating rear axles well enough. We do not. Overland Model 69T axles must be better—*THREE-QUARTER FLOATING.*

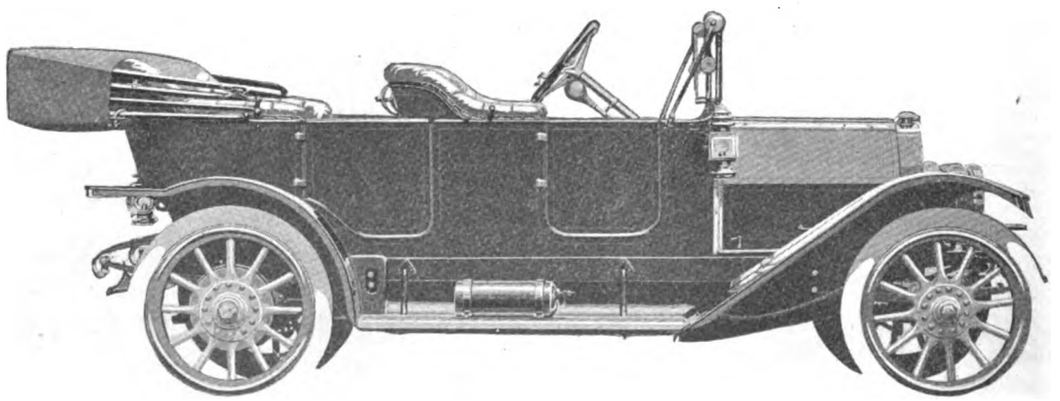
The Overland three-quarter floating axle causes the weight of the car and its load to rest on the axle housing—reinforced by an inner steel tube, riveted and keyed to the housing.

Advantage?

In the ordinary semi-floating axle the weight of the car and its load is carried half and half on the axle shafts and housing. Hence, the axle not only does the wheel driving, but must carry, also, part of the great weight. Result—excessive strain and friction, most surely causing disalignment of bearings. More repair expense.

High-priced features in a low-priced car. This is one of the features that make the Overland the greatest value in the world. Let us send you a catalog which explains in detail the many other high priced features. Please address Dept. 50.

The Willys-Overland Company
Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, October 31, 1912 No. 6

FIRESTONE STRENGTHENS DEFENSE IN RIM SUITS

Granted Permission to File Supplementary Answer—Split Ring Among Inventions Involved—Charges United With Bad Faith.

In an effort to strengthen its defense in three actions brought against it for alleged patent infringement which have been pending for two years in the United States District Court for the Southern District of New York, the Firestone Tire & Rubber Co. of New York on Tuesday last, 29th inst., secured permission to file a supplementary answer to the complainants, the United Rim Co., of Akron, O., which answer will include a list of foreign patents alleged to aid in establishing cases of the prior art. The cases originally were filed June 8, 1910, and meanwhile considerable evidence has been gathered abroad which will enter into the suits when they come to trial.

The patents involved are Nos. 816,884, granted April 3, 1906, to Charles S. Scott; 832,170, granted October 2, 1906, to Edwin C. Shaw, and 910,869, granted January 6, 1909, also to Shaw. The first covers the split retaining rings for quick detachable tires, the second covers a tool used in drawing the rings together, and the third applies to the slotted "keepers" employed to keep the ring in position. They passed through various hands from the time of their conception, and after being granted by the Patent Office were transferred at various dates to the present holder, the United Rim Co. At the time they were issued they were assigned to the Goodyear Tire & Rubber Co., which later transferred them to the United Rim Co., which acquired rights held by the Goodyear and several other tire companies.

The United company claims the usual things asked in patent litigation and requests injunctions, an accounting and damages. The Firestone company sets up anticipation as one of its defenses, in proof citing patents that range from Renard's wheel of October 22, 1901, to a wheel by Midgley, patented July 5, 1904, as evidence that the split ring lacked novelty, and in the case of the tire tool cites Frost's belt stretcher, patented November 14, 1882, and Knep's watchmakers' pliers, patented October 3, 1893, among others.

In addition to these defenses the Firestone company charges lack of good faith in three suits. It alleges and charges that the United Rim Co. "was organized and created for the unlawful purpose of obtaining the control of the production and marketing of certain automobile parts and accessories and to control and restrict such production in defiance of the public's needs and requirements . . . and for the further purpose of harassing and annoying the defendant, frightening its customers in an attempt to compel them to purchase such articles from the complainant."

Fisk Becomes $10,000,000 Corporation.

Heretofore a $4,000,000 Delaware corporation, the Fisk Rubber Co., of Chicopee Falls, Mass., last week reincorporated, under the laws of Massachusetts, with an authorized capital of $10,000,000. While the increase of capitalization implies a considerable expansion of the Fisk business, the exact meaning of the change is not yet public property. The Fisk people themselves state that at this time they are not prepared to say anything whatsoever regarding it.

Ill Health Parts Wheeler and Schebler.

Because of ill health, George A. Schebler, the inventor of the carburetter which bears his name, has retired from the Wheeler & Schebler Co., of Indianapolis. Schebler's withdrawal leaves F. H. Wheeler in sole control of the company, which, as a matter of fact, he has dominated at all times since its organization.

CANFIELD PATENT DECLARED NOT BASIC

Federal Court Decides It Does Not Control Modern Spark Plugs—Lapses Also Constitute "Fatal Bar."

Admitting that Frank P. Canfield, who died more than 10 years ago, contributed to the development of the spark plug, Judge Mayer, in the United States District Court for the Southern District of New York, on Monday last, 28th inst., denied to him credit for the invention of spark plugs of to-day, and specifically the spark plugs characterized by a deep recess around th electrodes, which is the type which is in practically general use.

As the Canfield patent, No. 612,701, dated October 18, 1898, was believed by those to whom it was assigned, to control such plugs, Judge Mayer's decision upsets this belief and frees from the suspicion or charge of infringement all manufacturers who are engaged in the manufacture of deeply recessed and all other modern plugs.

Judge Mayer's ruling was rendered in the case of A. R. Mosler & Co., of New York, against John Lurie, of New York, trading as the Auto Supply Co. As a matter of fact, however, Lurie was merely a nominal defendant, as it is generally understood that the burden of his defense was borne by C. A. Mezger and the Rajah Auto Supply Co., whose plugs had been handled by Lurie.

The patent was acquired about 1906 by the now defunct Association of Licensed Automobile Manufacturers at the time it was engaged in the acquirement of rights which were supposed to be of a basic or far-reaching nature. It was duly conveyed to the Association Patents Co., which was an outgrowth of the A. L. A. M., which company, in 1909, disposed of it to Mosler

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& Co., the terms of the sale protecting A. L. A. M. members from prosecution. In due course, Mosler & Co. instituted suit against Lurie and the outcome of the litigation has been awaited with no little interest, the Canfield claim to the deeply recessed plug affecting practically every spark plug manufacturer in the country.

In deciding the suit, Judge Mayer held that "the patent is sustained within the limits here indicated and it is held that there is no infringement," which, according to those most concerned, is interpreted as meaning that the Canfield rights are limited strictly to the plug described and illustrated by the letters patent, which plug—a large, cumbersome one as compared with present types—was formed integral with the head of

(Continued on page 37.)

Flanders Deal Far from Consummation.

While the negotiations are well advanced, it is by no means certain, as has been made appear, that Walter E. Flanders will become either president of general manager of the reorganized United States Motor Co., or that the latter corporation will absorb the Flanders Motor Co., even if it takes over Flanders himself. The negotiations depend largely upon the result of the examination of the Flanders company which is now in progress, and which is being conducted by the New York accounting firm, Price, Waterhouse & Co., who are acting, of course, in the interests of those who have the reorganization of the United States Motor Co. in hand. At best, it will be more than a month before the United States Motor receivers are discharged and, until that time at least, it will not be possible for the reorganized company legally to enter into a contract with Flanders or anyone else.

Quarrelling Partners Near Settlement.

Judgment for an accounting was rendered late last week in the Supreme Court for New York County in favor of Cornelius F. Jackson, who brought suit against Clarence A. Glentworth, following a five and one-half months' partnership of the two in Glenworth's business as importer of Napier cars at 103 West 57th street. The dispute between the two men, as was related in Motor World at the time the action was instituted, was due to Jackson's claim that he put money into the business, but later received it back, and then practically was "frozen out" when there was coming to him $3,300 in profits. Glentworth opposed the claims, and when Jackson asked for a receiver Glentworth himself was appointed. Glentworth denied that Jackson was entitled to the profits claimed. He claimed instead that Jackson never sold a car while with the company and had received all he was entitled to.

BENZ WANTS MONEY BACK; SETS UP CHARGE OF FRAUD

Claims Misrepresentation Induced Purchase of American Agency—Files Seven Suits Against Froelich and the Weingartens.

Claiming that fraud was perpetrated when the Benz Auto Import Co. of America was sold last spring by Jesse Froelich and David and Oscar Weingarten to the parent company, Benz & Cie, of Mannheim, Germany, the latter and its New York importing house are suing Froelich and the Weingartens in the Supreme Court for New York county. Seven different actions, filed late last week, are required to cover all phases of the proceedings, in which the sum of $160,000 is involved. The German company itself is the complainant in two suits; the other five are brought in the name of the New York corporation.

As gathered from the complaints and other sources, the plaintiffs allege high financing of an exceedingly lofty nature on the part of the defendants. In 1909 it appears that Froelich, who was a part of the Times Square Automobile Co., and the Weingartens, who are wealthy corset manufacturers, formed the Benz Auto Import Co. of America in New York City with an authorized capitalization of $100,000, the three taking up 55 per cent. of the stock. For some not clearly stated reason, this company was dissolved in 1911 and its assets and liabilities taken over by another corporation of the same name, which was formed with the same men, same capital and same division of stock, the three exchanging their old stock for shares in the new company.

During 1911, according to the plaintiffs, whose complaints are voluminous, and immediately following the formation of the second Benz importing house, Froelich visited Mannheim and showed to Benz & Cie. a statement of the condition of the New York house, representing, it is claimed, that the American agency was in fine condition, was well thought of, had a good credit, and a surplus of $30,000, and was on the road to prosperity. The representations so pleased the Benz principals that when Froelich offered to sell they agreed to buy. They contracted to purchase the outstanding 55 per cent. of stock for about half price and to pay a loan of $84,000 made to the New York company by the Weingartens, it being represented that this money existed in tangible assets. Full of hope and faith, the Germans paid over close to $107,000.

At the time of the deal there appears to have been 45 per cent. of the stock in the treasury, and Benz & Co. claim that Froelich and the Weingartens, having sold their 55 per cent. to the Germans, issued the remaining 45 per cent. to themselves and, through some oversight, forgot to pay for it. However, the Benz interests sent over representatives to take charge of the prosperous agency, and there immediately went up a cry of protest that culminated in the present actions.

The Germans claim that, instead of finding a surplus of $30,000, they found a deficiency of some $35,000, making a difference from the representation of about $65,000. They also allege that the business was not in the condition pictured to them and, instead, was on the way to become a wreck. They moreover assert that when Froelich saw fit to retire he took with him $7,500 in cash and $7,250 in the form of two chassis. The $7,500 he is said to claim as commission from the parent company on the stock sale, but Benz & Co. declare that if such was the case the $7,500 was taken from the wrong treasury.

The seven actions instituted are as follows:

Benz, of New York, vs. Froelich—To recover the $7,500 alleged to have been taken from it under the so-called commission deal.

Benz, of New York, vs. Froelich—To recover $7,250, the price of two chassis.

Benz, of Germany, vs. Froelich—To rescind the purchase of Froelich's share of the 55 per cent. of stock and to compel the return of $7,500 paid therefor.

Benz, of New York, vs. Froelich—To recover $22,500 worth of stock issued to himself and not paid for.

Benz, of New York, vs. Oscar Weingarten—To recover $11,250 worth of stock issued to himself and not paid for.

Same case against David Weingarten.

Benz, of Germany, vs. David and Oscar Weingarten—To recover the price paid for the Weingartens' share of the 55 per cent. of stock and also the $84,000 loan, a total of $99,000.

Lee Tires for the Pacific Coast.

The Chanslor & Lyon Co. has been appointed Pacific Coast representative of the Lee Tire & Rubber Co., of Conshohocken, Pa. Lee tires will be distributed from the Chanslor-Lyon branches in San Francisco, Los Angeles, Fresno, Portland, Seattle and Spokane.

Blagden Receiver for Daimler Import.

Arthur W. Blagden has been appointed receiver for the Daimler Auto Import Co., of New York, which was petitioned into bankruptcy last week. The company's liabilities are estimated at $30,000, of which only about $500 is due merchandise creditors.

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R.C.H. ENLARGES BOARD AND ACQUIRES SUPPORT

Having too Much Business for its Capital, Detroit Company Confers with Creditors—They Afford Quick Relief.

With orders in hand for some 16,000 cars and with its business growing too rapidly for the amount of capital invested, the R. C. H. Corporation, of Detroit, frankly called its creditors and stockholders into conference in that city on Friday last, 25th inst., when the required support was secured.

The company's exact financial condition was made known by its principals in the form of a report compiled by McPherson, Weiss & Co., expert auditors and accountants, which showed an excess of assets over liabilities of $576,000. Two hundred merchandise and banking creditors, whose interests aggregated $61,600,000, were represented at the meeting, all of whom assented to a plan that will permit the business not only to be carried on but further expanded.

To better permit of the execution of the plan, the R. C. H. board of directors will be increased from three to nine. One of them will be R. C. Hupp; the others will represent the creditors. Sixty per cent. of the voting stock will be placed in the hands of a committee of three, with power to vote the stock at its discretion, which requirement is designed to protect the creditors and to insure the continuance of the business should anything happen to R. C. Hupp or his brother, L. G. Hupp, while the arrangement is in force.

The enlarged board of directors will be made up as follows: John Kelsey, Kelsey Wheel Co.; J. F. Hartz, C. M. Hall Co.; H. S. Firestone, Firestone Tire & Rubber Co.; Charles P. Sieder, Sieder Mfg. Co.; Joseph H. Clark, attorney; Fred M. Randall, Chas. H. Fuller Co.; G. A. McCutcheon, American Gear Co.; J. H. Sieberling, Goodyear Tire & Rubber Co., and R. C. Hupp.

According to the plan adopted at Friday's meeting, factory operations will be continued without interruption and the creditors will receive payment on account, pro rata, at stated periods, which represents an extension of practically 12 months. All current bills are to be paid in cash.

According to the by-laws of the R. C. H. Corporation, the plan can not become operative until Friday, November 8th, but such a large proportion of the creditors already having assented, there is no doubt of its consummation, and as there is on hand sufficient material to make up some 1,500 cars, factory operations will not be interrupted or delayed in any way.

Bankruptcy Petition Stops Ohio's Sale.

On Monday last, 28th inst., the date when the receiver intended to apply to the court for an order to sell the property of the Ohio Motor Car Co., of Cincinnati, three creditors filed a petition in bankruptcy against the company, charging, among other things, that the receivership was designed to permit the Diamond Rubber Co. to protect its claim of $6,000 and thus to give to it preference over other creditors. It is also alleged that on May 1st last, while insolvent, the Ohio company gave the Miami Valley National Bank of Commerce a bill of sale and mortgage on 11 automobiles to secure a debt to the bank of $11,552, and still later turned over two more cars to the same bank. The creditors who filed the petition in bankruptcy are the Eisemann Magneto Co., with a claim of $1,980, the Bosch Magneto Co., $495, and W. D. Byron & Sons, $825.

The receiver has in hand a bid of $65,000 for the entire assets of the Ohio company, which will be paid one-third in cash and the remainder in notes running up to 18 months. As the real estate is encumbered by a $25,000 mortgage, the offer, if accepted, would net $40,000 cash.

"Nobby Tread" Goes To Supreme Court.

What amounts to a request that the United States Supreme Court review the Republic Rubber Co.-Morgan & Wright fight over the validity of the Tod J. Mell patent, No. 898,907, covering the Republic "Staggard" tread, was made this week when the Republic company submitted a petition for a writ of certiorari. Inasmuch as such petitions rarely are granted in patent cases the success of the appeal is doubtful.

The decision of which reversal is sought was made by the Court of Appeals in May and was to the effect that the "Nobby" tread of Morgan & Wright did not infringe the "Staggard" patent, after the lower court the "Staggard" patent, which decision was rendered after the lower court had ruled that the patent was valid.

LaCroix-Daimler Suit is Adjusted.

The suit of the Paul LaCroix Automobile Co., of New York, against the Daimler Auto Import Co. for $50,000 for breach of contract has been amicably settled. The action grew out of a contract executed in January last whereby the LaCroix company was given the Mercedes agency for the Metropolitan district. Only a very limited number of the cars called for were delivered, however, and as a result the LaCroix people resorted to law.

U. S. MOTORS' RECEIVERS RENDER FIRST STATEMENT

After Viewing Figures, Court Orders Certain Payments and Authorizes Receivers' Certificates—Minority Stock Objects.

It probably will be December 15th before the United States Motor Co. is relieved of its receivership. This was indicated on Monday last, when the receivers, W. E. S. Strong and Roberts Walker, rendered their first report to Judge Hough in the United States District Court in New York City, although it is possible that the several properties may be disposed of before that date and progress correspondingly be advanced. At any rate, Judge Hough directed that a sale be arranged as soon as possible, and designated November 11th as the time for appearance to discuss any plans of sale which may be submitted to the court, which denied the receiver's request for permission to liquidate the several selling companies located in various parts of the country which they have found were operating at a loss. Instead, Judge Hough ordered that special application be made in each case.

The receivers were authorized to continue the business and to issue, as needed, receivers' certificates to the amount of $1,500,000. These are to become a first lien against all of the property except the Maxwell-Briscoe plant, and only against that factory, if necessary as a last resort. The hearing in court brought out, what was already quite generally known to the trade, that the Maxwell-Briscoe Motor Co. is the most profitable unit of the United States Motor Co., and it is, therefore, particularly desirable that its business be conducted without interruption. It also developed that the Westchester Appliance Co., which has to do with parts and accessories, likewise has been run at a profit.

Among other things, Judge Hough ordered that deposits owed to dealers, amounting to $32,513, be paid from the trust fund created for that purpose, and that merchandise creditors who delivered goods to the United States Motor Co. between the time of the creditors' extension agreement in June and the appointment of receivers on September 12th be paid, where their claims are proven, the amounts to be apportioned against the various plants which received the goods. This means that the creditors immediately will receive the 25 per cent. in cash, as planned by the creditors' committee.

At Monday's hearing, attorneys representing Frederick Drew Bond, who, in turn, represents minority stockholders ho'ding

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about 2,000 shares, filed a petition demurring against the action of the court, whose rulings were attacked on the ground of lack of jurisdiction. The United States Motor Co. being a New Jersey corporation, the petitioners maintained that the proceedings should be brought in the Federal jurisdiction in that state.

These minority creditors object to the assessment of $24 per share, as outlined by the reorganization committee, and if Judge Hough should overrule their demurrer, it is their purpose to carry the case to the United States Supreme Court, if necessary, which may or may not be done, and which may or may not serve to delay the reorganization of the big company. It is stated that the objecting stockholders will demand also an explanation of the decrease in assets reported since the receivership was instituted.

According to the consolidated statement of assets and liabilities as of September 11th, which was presented to the court on Monday, the United States Motor Co., as a going concern, has total assets of the estimated value of $12,728,165.60 and total liabilities of $11,817,856.27, an excess of assets over liabilities of $910,309.33. The liabilities, however, do not include the outstanding capital stock, amounting to $23,837,483.35, or a disputed claim of the Providence Engineering Works amounting to $38,532.26, or the Briscoe Mfg. Co.'s inter-company account, amounting to $313,970.91. The statement in full is shown by the accompanying ment in full is as follows:

AGGREGATE LIABILITIES.

Real Estate Mortgages	$ 164,540.90
Debenture Bonds, Bond Scrip and Interest	6,161,509.87
Notes of One or More of the Subsidiary Companies:— Endorsed by the United States Motor Company, and Notes of one or more of the Branch Selling Companies endorsed by the United States Motor Company, with interest	*2,194,258.12
Notes of United States Motor Company:— Endorsed by one or more of the Subsidiary Companies	650,820.99
Claims Against United States Motor Company Only:— Of this sum, approximately $100,000 is due for goods delivered immediately prior to Receivership	1,961,875.99
Claim Against Columbia Motor Car Company, or United States Motor Company, or Both	91,789.60
Notes Secured by Sight Draft on Car Shipments	63,691.26
Wages of Employes and Accrued Expenses	74,256.30
Dealers' Deposits (Partly Offset by Accounts Receivable)	55,113.24
Contingent Liability on Endorsement of Notes of E. R. Thomas Motor Car Company	†400,000.00
Providence Engineering Works:— Claim made for work performed—Disputed $138,532.26	—0—
Total Liabilities Other than Inter-Company	$11,817,856.27
Inter-Company Accounts:— Briscoe Manufacturing Co. $313,970.91 Briscoe Mfg. Co. $313,970.91 The Capital Stock of this Company is owned entirely by the United States Motor Company, and, as the Briscoe Mfg. Co. is regarded as a solvent Company, this liability is taken at	shrdl cmfw —0—
Excess Assets—Estimated Value as shown—Over Liabilities as Shown	901,309.33
Total	$12,728,165.60

Capital Stock (not included in this Statement) Outstanding—Outside Ownership:—

United States Motor Company, Pref.	$11,499,733.33
United States Motor Company, Com.	12,206,350.00
Columbia Motor Car Company, Pref.	13,400.00
Columbia Motor Car Company, Com.	118,000.00
	$23,837,483.33

* It is estimated that the Branch Selling Houses can pay $756,226.18 on their Notes, after providing for their local indebtedness.

† The Receivers of the E. R. Thomas Motor Car Company estimate that that Company will pay from 25% to 40% to its Creditors.

AGGREGATE ASSETS OF COMPANIES IN RECEIVERSHIP.

Real Estate, Buildings and Equipment—as per the Books	$7,858,266.23	
Deduction—Depreciation as per the Books	1,473,493.24	
	$6,384,772.99	
Value as a going concern—Appraised by Gunn, Richards & Company (Auction Value—Appraised by Gunn, Richards & Co., $2,602,000.00).		$4,999,836.31
Real Estate Investments:— Columbus Circle Realty Company—Capital Stock at par—as per the Books	$112,000.00	
Improvements made on premises owned by Columbus Circle Realty Company—per Books	116,311.67	
	$228,311.67	
Building and Improvements appraised by Gunn, Richards & Co. at $587,737.00; Estimated Value in the equity based on appraisal	$83,520.00	
New Castle Construction Company—Bonds at par—as per the Books; and Estimated Value, based on appraisal of property by Gunn, Richards & Co.	36,000.00	119,520.00
Total Real Estate, Buildings, Machinery and Equipment		$5,119,356.31
Furniture and Fixtures:— Estimated Values, as per Office Employees; Appraiser's Figures not yet received: New York Office	$36,000.00	
Factories	40,000.00	76,000.00
Inventories—Estimated:— At Factories, and on Consignment from Factories, as per actual Inventory July 31, 1912, brought to September 11, 1912, by adding purchases, and labor and deducting Sales —as per Books	$5,772,870.52	
Deduction—Reserve for Obsolete Material, etc., estimated by the Comptroller of the Company	1,024,831.72	
	$4,748,038.80	
(Of this sum less than $275,000.00 is represented by completed new cars.) Estimated Value: by Messrs. Anthony, Maxwell, and Jameson (for the Company) on the basis of a going concern for all Factories, all operating, except the "Brush"		4,500,000.00
On the basis of closing down the Brush and Alden-Sampson Factories, $4,100,000.00.		
On the basis of closing down the Brush, Alden-Sampson, Columbia and Dayton Factories, $3,000,000.00.		
Accounts Receivable—Not including Inter-Company Accounts—as per Books	$661,257.22	
Deduction—Reserve for Doubtful Accounts—as per Books	73,010.70	
	$588,246.52	
Estimated Value		550,000.00
Notes Receivable—In hands of Treasurer—as per the Books	$55,406.44	
Estimated Value		34,830.20
Cash in Hand and on Deposit		412,027.80
Cash—Special to provide for Dealers' Deposits (This fund stands to Credit of U. S. Motor		62,513.24
Company in Banks as "Special Fund")		45,440.21
Prepaid Expenses; Insurance Premiums—Unexpired Proportion—Estimated Value		
Total Assets other than Inter-Company Accounts		$10,800,167.76
Inter-Company Accounts:— Accounts Receivable—Due from Factories to U. S. Motor Co. and other	$4,789,713.56	
Inter-Company Accounts—all in Receivership	4,789,713.56	—0—
Offset by Liabilities to Companies in Receivership—of Equal Amount		
Accounts Receivable—Due by Branch Selling Companies on Notes assigned to Banks with Endorsement	$1,303,838.25	
Unassigned Notes and open account	2,066,844.03	
	$3,370,682.28	
Estimated Value of the Entire Debt, Assigned and Unassigned, $1,954,995.72.		1,198,769.54
Estimated Value of the Entire Debt so far as Unassigned	$5,000.00	
Notes Receivable—E. R. Thomas Motor Car Company		2,000.00
Estimated Value, problematical		4,042.23
Accounts Receivable—National Motors Company—Estimated Value Par		
Accounts Receivable—Providence Engineering Works—as per the Books—	$180,923.53	
Disputed		—0—
Estimated Value		
Total Assets, other than Securities Owned: Going Concern Value		$12,004,979.53
Securities Owned in Other Controlled Companies: Briscoe Manufacturing Company—Par Value of Capital Stock Owned	$310,000.00	
Estimated Value, over and above amounts due from U. S. Motor Co.		367,995.00
(Appraisal of Real Estate, Buildings, Machinery, etc., by Gunn, Richards & Co., as a going concern $166,995.00, and Auction Value $121,000.00.)		
Providence Engineering Works—Par Value of Capital Stock Owned	$500,000.00	
Estimated Value, problematical		1.00
(Appraisal of Real Estate and Buildings by S. A. Nightingale & Company, not including Machinery, to the amount of $91,021.00.)		
E. R. Thomas Motor Car Company—Par Value of Capital Stock Owned.	$2,400,000.00	
Estimated Value		—0—
Courier Car Company—Par Value of Capital Stock Owned	$500.00	
This Company has no Assets—Estimated Value		—0—
National Motors Company—Par Value of Capital Stock Owned	$849,600.00	
Estimated Value—Based on Equity in Real Estate at Boston, (Mass.); New Castle, (Ind); Equity in certain Branch Selling Companies; Cash; Receivables, etc.		355,190.07
Total Assets, Estimated Value		$12,728,165.60

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The Week's Incorporations

Naugatuck, Conn.—Richardson Auto Co., under Connecticut laws, with $4,000 capital; to deal in motor cars.

St. Louis, Mo.—Cadillac Automobile Co., under Missouri laws, with $50,000 capital; to deal in motor cars.

Wilmington, Del.—Dayton Motor Truck Co., under Delaware laws, with $100,000 capital; to manufacture motor trucks.

Louisville, Ky.—Highland Motor Transfer Co., under Kentucky laws, with $5,000 capital; to operate a motor delivery.

Johnstown, Pa.—United States Motor Sales Co., under Pennsylvania laws, with $40,000 capital; to deal in motor cars.

Jacksonville, Fla.—Jacksonville Tire & Supply Co., under Florida laws, with $250,000 capital; to deal in motor car supplies.

Trenton, N. J.—Hendricks Mfg. Co., under New Jersey laws, with $50,000 capital; to deal in motor cars. Corporators—F. S. German and others.

Augusta, Me.—Star Motor Car Co., under Maine laws, with $500,000 capital; to deal in motor cars. Corporators—N. L. Goodall, W. N. Sanborn.

New Orleans, La.—Exeride Filler Co., under Kentucky laws, with $15,000 capital; to deal in motor cars. Corporators—John Rommel and others.

Wilmington, Del.—Muston Multiple Co, under Delaware laws, with $125,000 capital; to deal in motor car supplies. Corporators—C. Spring and others.

Chicago, Ill.—Barry Taxicab Co., under Illinois laws, with $15,000 capital; to operate taxicabs. Corporators—A. A. Rolf, F. A. Tufford, Mathew Mears.

Louisville, Ky.—General Motors Co., under Kentucky laws, with $100,000 capital; to deal in motor vehicles. Corporators—R. A. Whitehead and others.

Chicago, Ill.—Terminal Garage, under Illinois laws, with $10,000 capital; to operate a garage. Corporators—Andrew W. Little, A. Cohen, Joseph L. McCarthy.

Dayton, Ohio—Independent Motor Inspection Co., under Ohio laws, with $10,000 capital; to appraise motor cars. Corporators—V. A. Troxell and others.

Boston, Mass.—Newbury Auto Co., under Massachusetts laws, with $5,000 capital; to deal in motor cars. Corporators—Ernest L. Rowe, George W. Mullett, Paul J. Scanlon.

Trenton, N. J.—Tibbett & Co., under New Jersey laws, with $10,000 capital; to deal in motor cars. Corporators—George Tunnicliffe, E. Knapp, Joseph Tibbetts.

Everett, Wash.—Ferrel Auto Co., under Washington laws, with $15,000 capital; to deal in motor cars. Corporators—A. M. Ferrell, Elbert Ferrell and others.

Salem, Ore.—Beaver State Motor Co., under Oregon laws, with $300,000 capital; to manufacture and deal in motor cars. Corporators—P. A. Combes and others.

Des Moines, Ia.—Van Vliet-Bradt Motor Co., under Iowa laws, with $10,000 capital; to deal in motor cars. Corporators—W. E. Moyer, W. J. Bradt, C. G. Van Vliet.

Chicago, Ill.—Olesen-Juergens Co., under Illinois laws, with $3,000 capital; to deal in motor cars. Corporaotrs—Lauritz Olesen, William A. Juergens, Julius Rubinstein.

Louisville, Ky.—Southern Motors Co., under Kentucky laws, with $100,000 capital; to deal in motor cars. Corporators—Alvin T. Hart, Richard V. Cook, G. G. Botts.

Waterloo, Ia.—Central Auto & Supply Co., under Iowa laws, with $10,000 capital; to deal in motor cars and supplies. Corporators—A. L. Alexander and others.

Bridgeport, Conn.—Locomobile Co. of Missouri, under Connecticut laws, with $10,000 capital; to deal in motor cars. Corporators—Arthur M. Marsh and others.

Buffalo, N. Y.—Lafayett Motor Sales Co., under New York laws, with $10,000 capital; to deal in motor cars. Corporators—Joseph A. Groh, Frank J. Batt, Annie E. Groh.

St. Matthew, S. C.—Calhoun Garage, under South Carolina laws, with $3,000 capital; to operate a garage. Corporators—C. R. Fuller, N. E. Salley, J. W. Salley.

Boston, Mass.—Eldridge Mfg. Co., under Massachusetts laws, with $25,000 capital; to manufacture motor car parts. Corporators William E. Eldridge, Harold B. Church.

St. Louis, Mo.—St. Louis Lozier Co., under Missouri laws, with $25,000 capital; to deal in motor cars. Corporators—H. B. Graham, Nelson B. Getahall, and others.

Seattle, Wash.—McKenna & Harmon, under Washington laws, with $2,000 capital; to deal in motor cars. Corporators—C. E. McKenna, F. E. Harmon, George B. Kile.

Chicago, Ill.—S. Breakstone, Inc., under Illinois laws, with $50,000 capital; to deal in motor cars. Corporators—Rudolph Storch, William H. Devenish, Jay Warner.

Tacoma, Wash.—Auto Equipment Co., under Washington laws, with $3,000 capital; to deal in motor car supplies. Corporators—R. F. Linquist, Hugo Metzler and others.

Chicago, Ill.—Dean Auto Devices Co., under Illinois laws, with $40,000 capital; to manufacture motor car devices. CorporatorsE. R. King, Robert L. Ames, George F. Ort.

Chicopee, Mass.—Fisk Rubber Co., under Massachusetts laws, with $10,000,000 capital; to manufacture rubber goods. Corporators—Harry T. Dunn, Harry G. Fisk, John C. Cole.

Pierre, S. D.—Twin City Motor Car Co., under South Dakota laws, with $60,000 capital; to deal in motor cars. Corporators—Paul J. Kalman, John Rapliam, W. F. Eddy.

Elmhurst, Ill.—Elmhurst Motor Sales Co., under Illinois laws, with $10,000 capital; to deal in motor cars. Corporators—Walter B. Kidder, Hosmer H. Allyn, Frederick H. Bates.

Waynesville, N. C.—Blue Ridge Motor Co., under North Carolina laws, with $25,000 capital; to deal in motor cars. Corporators—G. H. Paddock, James Atkins, Jr., H. Rotha.

Morgantown, W. Va.—City Automobile Co., under West Virginia laws, with $4,800 capital; to deal in motor cars. Corporators—J. L. Smith, B. S. Dering, N. B. Yost and others.

Chicago, Ill.—Motor Supplies Co., under Illinois laws, with $5,000 capital; to deal in motor car supplies. Corporators—H. C. Maibohm, P. W. Gillette, E. M. Beauchamp.

St. Louis, Mo.—Brashear Truck Co., under Missouri laws, with $5,000 capital; to deal in motor vehicles. Corporators—J. Roy Brashear, Boyle O. Rodes, Louis C. Haslam.

Dover, Del.—J. M. Shock Absorber Co., under Delaware laws, with $300,000 capital; to manufacture motor car accessories. Corporators—H. V. Carr, L. C. Michaelson, M. G. Ryan.

Washington, D. C.—Pnucar Co., under

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Delaware laws, with $500,000 capital; to deal in motor cars. Corporators—Louis A. Hill, Louis E. Bradford, Benjamin R. Shockley.

Connersville, Ind.—Lexington Sales Co., under Indiana laws, with $100,000 capital; to deal in motor car parts. Corporators—Milton W. Tichenor, Edwin B. Lilly, Wm. M. Place.

Farmville, N. C.—Davis Motor Co., under North Carolina laws, with $50,000 capital; to deal in motor cars. Corporators—Jesse Speight, J. R. Davis, F. R. Townsend, W. L. Joyner.

Chicago, Ill.—Joliet Auto Supply Co., under Illinois laws, with $5,000 capital; to deal in motor car supplies. Corporators—Ben S. Moore, Thomas J. Bracker, John H. Garnsey.

Newark, N. J.—Charles E. Ball, Inc., under New Jersey laws, with $10,000 capital; to deal in motor cars Corporators—Charles E. Ball, J. Robert Whitlock, Schuyler M. Cady.

Westfield, N. J.—W. C. D. Motor Car Co., under New Jersey laws, with $50,000 capital; to manufacture motor cars. Corporators—Peter C. Wall, Walter E. Camping, W. J. Druppleman.

Chicago, Ill.—M. R. L. Resilient Tire Co., under Illinois laws, with $25,000 capital; to manufacture tire filler. Corporators—Mitchell R. Labbee, Martin O. Lundholm, R. Wilson More.

Newark, N. J.—Continental Garage Co., under New Jeresy laws, with $10,000 capital; to operate a garage. Corporators—Littleton Kirkpatrick, Robert C. German, Stuart A. Young.

Camden, N. J.—Hendricks Mfg. Co., under New Jersey laws, with $250,000 capital; to manufacture motor car devices. Corporators—F. R. Hansell, John A. MacPeak, F. S. German.

Boston, Mass.—United States Puncture Proof Tire Filler Co., under Massachusetts laws, with $50.000 capital; to manufacture tire filler. Corporators—Robert E. Magee, Austin Wilson.

Madison, N. J.—Michigan Motor Sales Co., under New Jersey laws, with $10,000 capital; to deal in motor cars. Corporators—Elmer L. Reynolds, Alvah L. Reynolds, Clara Reynolds.

Akron, Ohio.—Akron Welding Co., under Ohio laws, with $10,000 capital; to manufacture welded metal parts. Corporators—Milton M. Smith, George I. Stuver, Edward H. Doylan, David H. Morgan, Lucille S. Smith.

New York, N. Y.—Perfection Automobile Body Co., under New York laws, with $15,000 capital; to manufacture motor car bodies. Corporators—William H. Mendel, 145 Summit avenue, Mount Vernon; William H. Mendel, Jr., 2650 Broadway; James V. Simpson, 239 Summit avenue, Mount Vernon.

Changes Among Prominent Tradesmen.

A. E. Schwartz, treasurer and general manager of the Bergdoll Motor Car Co. of New York, has resigned those offices and will relinquish the duties on November 7th. His future plans have not yet become known.

C. W. Jacoby, former Eastern sales manager of the Standard Electric Co., has been appointed director of sales for the Pullman Motor Car Co., of York, Pa. He succeeds H. R. Averill, who resigned at the end of six years' service.

H. E. Bradford has been appointed shop superintendent of the Stewart Motor Corporation, of Buffalo, N. Y., manufacturer of the light delivery truck of that name. Previously he was identified with the Marmon and National companies in Indianapolis.

O. F. Conklin, for 16 years chief engineer of the Robbins & Myers Co., of Springfield, O., has been appointed consulting engineer to the Remy Electric Co., of Anderson, Ind. He will have special charge of the development and production of the Remy electric engine starter which shortly is to be placed on the market.

A. J. Rogers, manager of the Remy Electric Co.'s branch in San Francisco, has been transferred to the management of the New York house to succeed F. M. Henkel, resigned. P. E. Kempton, who has represented other magneto manufacturers on the Coast, has been appointed to fill the vacancy in the Remy establishment in San Francisco.

T. F. Johnston, who in August last resigned the management of the Buick Motor Co.'s Washington branch to become district manager in Philadelphia of W. C. Durant's Republic Motor Co., has been promoted to the post of general sales manager of the entire Republic establishment. He will make his headquarters in Detroit and will have entire charge of the sales of the Chevrolet, Little and all other Republic subsidiaries.

W. C. Sills, whose previous connection with the retail automobile business in Boston has served to make his name familiar to the trade, has been appointed general manager of the Republic Motors Co. of Massachusetts, which is one of the ten companies subsidiary to W. C. Durant's $65,000,000 parent Republic Motors Co. of Delaware. Headquarters of the Republic Motors Co. of Massachusetts have been established in Boston, where, for the time being, it will serve as a New England branch for the distribution of Little and Chevrolet cars.

Business Troubles.

Fred W. Herbst, receiver for the Barnt & Johnson Automobile Supply Co., of 2030 South High street, Columbus, O., is to sell the business as a going concern.

Edwin D. Bechtel has been appointed receiver for Claud A. Perkinson, automobile tire repairer and rubber worker on North Broadway, New York City; the receiver has authority to continue the business for 15 days.

A petition in bankruptcy has been filed against the Windermere Garage Co., 13560 Euclid avenue, East, Cleveland, O. The petitioning creditors are the Standard Oil Co., the Empire Tire Co. of New Jersey, and F. W. Schmidt, trading as the Euclid Printing Co.

Jesse J. Beitler, 561 West 141st street, New York City, formerly a dealer in automobile supplies, has been placed in the hands of a receiver; the Federal court named Leo J. Kersburg for the position, with a $500 bond. Beitler's liabilities are $3,536, his assets $2,236.

To foreclose a lien of $18,304 held by the Dayton Auto Truck Co., of Dayton, O., against the Motor Renting Co., of New York City, a writ of seizure for nine trucks was issued to the sheriff of New York county last week; the officer found the trucks at 103-7 West 108th street, where he left them in storage after levying upon them.

Changes in Capitalization.

Detroit, Mich.—Chalmers Motor Co. from $3.000,000 to $5,000,000.

Detroit, Mich.—M. & P. Electric Vehicle Co. from $50.000 to $100,000.

Muskegon, Mich.—Continental Motor Co. from $500,000 to $2,400,000.

Louisville, Ky.—Louisville Auto & Wagon Co. from $6,000 to $10,000.

Canton, Ohio—Knight Tire & Rubber Co. from $331,500 to $1,500,000.

Galion, Ohio—Cleveland-Galion Motor Truck Co. from $500,000 to $300,000.

Detroit, Mich.—Warren Motor Car Co. from $500,000 to $600,000.

Detroit, Mich.—Michigan Steel Casting Co. from $60.000 to $90,000.

Recent Losses by Fire.

Cedarhurst, L. I.—Michael Keller, garage and two motor vans destroyed. Loss, $9,000.

Detroit, Mich.—Hayes Manufacturing Co., enameling room damaged. Loss, $1,000.

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FLASH BEATS 35% YET IS LOSER IN CONTRACT SUIT

Court Awards Verdict in Favor of Decarbonizer Manufacturer—But Upholding of Contract Spoils the Victory.

A victory that has much the appearance of a defeat was won this week in the Supreme Court for New York county when the Flash Manufacturing Co., of Zanesville, O., was given a verdict of $533.77 against the 35% Automobile Supply Co., the action being the outgrowth of one of the "35%" contracts which provide a manufacturer with an easy way of parting with his merchandise in exchange for advertising in a trade circular which the "35 per centers" claimed had a "60,000 circulation." The verdict was directed by the judge, the jury not being given the case for consideration.

The Flash company contracted to supply decarbonizer to the 35% company to the amount of $3,360, in exchange for which it was to receive advertising in the "35%" circular. After a part of the goods had been supplied, the Flash company made another shipment and claimed this was extraneous to the contract and demanded cash payment therefor. In the first trial the judge directed a verdict for the full amount asked, $1,094.40, and interest, whereupon the 35% company asked permission to insert a supplementary answer and counterclaim. The judge denied this request, but the order was reversed by the Appellate Division.

This necessitated a new trial. On the first trial certain letters purporting to show that the last shipment was not included in the contract were admitted, but on the last trial they were excluded. Instead of allowing a verdict for the amount of this shipment, the judge allowed the counterclaim, which was for goods not delivered as yet under the contract, and the decision virtually was a financial reckoning somewhat favorable to the defendants.

Company Drops Calmon Name and Line.

Having secured a factory of its own a year ago and discontinued the importation of the products of the Calmon Asbestos & Rubber Works of Hamburg, Germany, the Calmon Asbestos & Rubber Works of America, formerly at 103 John street, New York City, but now in the United States Rubber Building, Broadway and West 57th street, has changed its name, dropping the word Calmon from the style; this is to remove any impression that the company still is an importer of the Calmon products. At the same time, the capitalization was increased from $25,000 to $100,000, of which the president and general manager, Edward H. Garcin, remains as before the largest stockholder. There are no other company changes.

The company a year ago bought the factory of the New Jersey Asbestos Co. in Camden, N. J., and there, among its other asbestos products, manufactures asbestos gaskets and "Ajax" and "Motobestos" brake linings. Before manufacturing its own goods the company had the exclusive Calmon agency for America.

Winton Settles London Rental Suit.

Satisfactory settlement having been made by the Winton Motor Carriage Co., of Cleveland, O., the action for rental of showrooms in London, Eng., brought September 15, 1911, in the United States District Court for the Southern District of New York by Herman Adolf Schatz was this week discontinued. Schatz was assignee of the Argus Properties, Ltd., which was landlord of 149-51 Brompton road, Kensington, London, and which rented these premises on November 30, 1906, to the Winton company for a period of 21 years, at an annual rental of £2,000 for all except the first seven years, the rent for that period to be £1,950.

The Winton people wished to transfer the lease in March, 1910, to the Picture Theaters, Ltd., but the Argus Properties opposed this. The Winton company then moved out and suit for a total of close to $12,000 was brought. A similar action was instituted in the High Court of Justice, King's Bench Division, in England. The settlement arrived at terminates both actions.

Haynes, of Missouri, to Dissolve.

Declaring that it has ceased to do business, the Haynes Automobile Co. of Missouri capitalized at $11,000, the headquarters of which are in St. Louis, has filed a petition for dissolution. The petitioning stockholders certify that all of the company's assets have been sold and its liabilities paid. These stockholders are as follows: T. H. Shiff, St. Louis, $7,200; J. J. Braznell, St. Louis, $1,000; H. W. Payne, St. Louis, $100; F. W. Niedermeyer, Columbia, Mo., $2,700.

Canadian Electric Gets Knox Trucks.

The Canadian General Electric Co., whose main office is in Toronto, is "going into" gasolene vehicles. To that end, it has secure the Canadian agency for the entire line of Knox trucks and fire apparatus. As the company maintains branches in all of the principal Canadian centers, it is well prepared to distribute the Knox productions throughout the Dominion.

TO PRODUCE NEW ELECTRIC TRANSMISSION MECHANISM

Company Now Forming With W. C. Baker, Who Controls Patents, At Its Head—Combines Magnetic Clutch and Dynamo.

For the purpose of manufacturing and marketing a new type of electric transmission which bears slight resemblance to several similar mechanisms which during the past year or so have made considerable reputation for themselves in foreign automobile circles, a company is in process of formation in Cleveland, O., and that the device is no experiment nor mere hazy vaporings is borne out by the fact that no less a person than Walter C. Baker, president of the American Ball Bearing Co., of Cleveland, and formerly intimately connected with the Baker Electric Co., is at the head of the venture. Baker himself controls the patents under which the mechanism will be produced, though they originally were issued to Justus B. Entz of 11439 Mayfield road, Cleveland.

The device has been in an experimental state for the past three years, and only within the past week has been brought to the state of final development where its incorporation and actual operation in an automobile were possible. Although negotiations pending the erection of a factory already are in progress, it has not yet been definitely decided whether complete automobiles incorporating the mechanism will be produced or whether the electric transmission alone will be produced as a unit and disposed of to automobile manufacturers.

According to available information concerning the device, it is applicable to any gasolene propelled car and eliminates the necessity for the usual mechanical clutch and the change gear mechanism, incidentally permitting materially increased transmission efficiency and the degree of flexibility in control inherent in the electric car. In its simplest aspect, the mechanism consists of a combination generator and magnetic clutch and a small electric motor mounted on the propeller shaft. The armature of the generator is direct connected to the propeller shaft and serves as the female member of the clutch. The field of the generator is connected directly to the crankshaft of the engine and acts as the male member of the clutch. In operation, slippage of the clutch, which permits the field and armature to rotate at different speeds results in the generation of current which is passed to the electric motor and thus assists in driving the car at other

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than high speeds. At high speeds, the armature and field of the generator rotate together as a magnetic clutch, and as no current then is generated, the electric motor temporarily is out of service. Control of the apparatus is effected through the use of a single foot lever which takes the place of the usual clutch pedal, the throttle and the spark advance lever.

Kelly Truck Offers Stock to Public.

The Kelly-Springfield Motor Truck Co., which recently took over the Kelly Motor Truck Co., is offering to the public, at 105, its 8 per cent. cumulative preferred shares, par value $100. Subscribers to this preferred stock also are given the option of purchasing, at $50 per share, common stock, par value $100, in amounts not exceeding 25 per cent. of the preferred subscriptions.

The capital of the new company, $2,500,000, is made up of 10,000 shares of common and 15,000 preferred, of which there is "to be issued presently 5,100 shares of common and 8,000 preferred of the total value of $1,310,000; of this number 2,193¾ shares each of common and preferred, to the value of $439,750, will be used in the acquisition of the Kelly property. Of the remainder, 2,901 shares of common at 33 1/3 per cent. of par, and 5,801¼ of preferred at par, total value $676,833.33, all of which was purchased by the New York banking house Emerson McMillan Co., will go into the treasury of the new company. Of the money put into the treasury, about $400,000 will be used to discharge obligations of the Kelly Motor Truck Co., which were assumed by the new corporation, the remaining $276,000, together with the liquid assets acquired, will provide an available working capital of something more than $500,000.

In the organization of the new company, and in acquiring the Kelly property, no stock was or will be issued for promotion purposes. It is stated that the old company at this time is making net earnings at the rate of more than double the amount of the dividend of the new preferred stock that is to be issued.

International Motor Sues a Tenant.

Because A. F. Fox & Co., who until a short time ago ran a shop in a loft building in West 55th street, New York City, failed to pay their rent to the International Motor Co., the latter brought an action late last week in the Supreme Court for New York County. The Motor company asks a sum close to $1,000. The Fox company now is said to be located in the Benz building in Brooklyn. In addition to the Fox company, Arthur F. Fox is named as a defendant.

ORSON COMBINATION IS FINALLY CONSUMMATED

After Long Delay, Merger of Car Company and Springfield Metal Body Goes Through—Plans in View.

After hanging fire for some six months, the amalgamation of the Springfield Metal Body Co. and the Brightwood Mfg. Co., both of Springfield, Mass., has been consummated, although several minor details still remain to be settled.

The merger first was undertaken in May last, when Jason Waters, who is connected with the New York banking firm of Strong, Sturgis & Co., figured as the moving spirit. Since that time, however, the negotiations passed to Tucker, Anthony & Co., Boston bankers, who also have a New York office and who will underwrite the present undertaking.

Originally it was intended that the new company should be styled the Nayasett Motor Co., but in the process of evolution that name has been discarded and a title woven around the name Orson probably will be employed, and the capital stock of the company will be about $1,500,000 instead of $2,000,000, as at first outlined.

The Springfield Metal Body Co., of course, is well and favorably known to the trade, but the Brightwood Mfg. Co. has figured but inconspicuously, having been devoted almost wholly to the production of a limited number of Orson cars, which were built on a subscription plan originated by a number of New York bankers, several of whom will be identified with the new enterprise.

The Smith brothers will remain as managers of the body plant, and the Brightwood company will continue to produce cars, but on a much more extensive plan. The car probably will be styled the Orson, but will be of a different type. It is the intention of the new company to produce trucks also, to which end negotiations are in progress for the American rights of a foreign vehicle, which, however, is not the Italian S. P. A. truck, which was included in the original outline.

Michelin Withdraws from the Sport.

After having given its support to automobile racing for seventeen years, and maintained its interest long after practically all other tire manufacturers had abandoned the sport, the Michelin Tire Co. formally has withdrawn from further participation in such competition. Public announcement of the fact was made early this week by J. Hauvette-Michelin, head of the Michelin works in Milltown, N. J.

Explaining the Michelin action, and while acknowledging that the knowledge gained in racing has served to improve tires, he states that the decline of interest and the glory earned by Michelin makes the moment fitting for the Michelin withdrawal. Michelin also adds that the number of serious accidents which have occurred during the season has influenced the action.

Oakland Lengthens Chain of Branches.

Lengthening the chain of branches it is establishing throughout the country, the Oakland Motor Car Co. has opened a branch in Houston, Tex., at Caroline and San Jacinto streets. It will be in charge of A. J. Challinor, who previously was connected with the Oakland factory in Pontiac, Mich. The Houston branch will be operated in connection with the larger establishment in San Antonio. The Oakland company also has leased, for ten years, a two-story building which is to be erected and completed about February 1st at 1521-23 McGee street, which building its branch will occupy.

Little Judgment Against "Big" Name.

Even though the Automobile and Cycle Co. of America, of 1777 Broadway, New York City, has a rather high sounding name, the name was not sufficiently imposing to prevent judgment being taken against the concern by W. R. Smith & Co., of 306 West 52d street, for repair work. The judgment, $37.67, was filed last week in the New York county clerk's office, and this week was satisfied. The defendant deals in used cars and employed the Smith company to do repair work.

Favary Seeks Site for Tire Factory.

Ethelbert Favary, of the Favary Tire & Cushion Co., of New York, which recently evolved an airless substitute for the pneumatic tire, is seeking a factory site. Last week he addressed the Business Men's Association of Middletown, N. Y., and offered to locate his factory in that thriving town if the citizens will subscribe $25,000.

Ajax Again Adding to its Plant.

The Ajax-Grieb Rubber Co. is enlarging its plant in Trenton, N. J., by the addition of a three-story brick building, 200 x 60 feet. It will be completed not later than December 31st of this year.

Federal Tire Opens Branch in St. Louis.

The Federal Rubber Mfg. Co., of Milwaukee, has established a branch in St. Louis at 4638 Olive street. It is in charge of F. S. Cropley, who at one time was identified with the G & J Tire Co.

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F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN E. F. HALLOCK

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BROCK MATHEWSON, Advertising Manager
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W. H. TRIPP, 1001 Ford Building, Detroit
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SYSTEM IN SMALL REPAIR SHOPS.

An idea that is none the less erroneous because it is rather widely accepted is that system is synonymous with red tape. Nothing could be further from the truth, for while red tape, according to the common acceptance of the term, is a hedge of unnecessary procedure that stands in the way of accomplishment, system is just the opposite, its purpose being the improvement of results by the improvement of methods.

Whether it is through misunderstanding of the real meaning of the term "system," or through skepticism as to the utility of systematic methods when applied on a small scale, it is certain that the average small repair shop is run about as loosely as an establishment can be run. It is not exaggerating to say that the typical repair man has no idea whatever of his financial standing beyond a knowledge of the amount of cash in his pocket. He does not know what profit he makes on labor and material. If a job happens to cost a great deal more than it ought to, he may know, vaguely, that such is the case; but he will not know exactly why, because he lacks an analysis of the work. He cannot stop leaks, because he does not know where they exist, unless they are so big as to swamp him.

The fact of the matter is that system, in its real meaning, is just as necessary in a small shop as in the extensive plants where such industrial wonders have been wrought by the application of proper methods. There is no reason why everything in a small shop should not be done according to the best ascertainable methods. By means of systematic methods, and in no other way, can loss be turned into profit in many little shops, and the sooner this is realized and put into practice by shop owners the better it will be for their bank accounts.

CARBURETTERS AND FUEL CONSUMPTION.

It is to be hoped that those who are inclined to look askance at carburetter performances will at least take the trouble to do a little figuring for their own good before pooh-poohing the idea that real savings in dollars and cents are made and can be made by others, in many instances by the mere turning of a couple of screws.

For instance, if a car is driven 5,000 miles in a year, which is conservative, at an average of 12 miles to the gallon of fuel at 22 cents a gallon, the total cost for fuel will be $91.74. If, by more careful carburetter adjustment, or by the use of an auxiliary air valve, the average mileage can be increased to 15 miles to the gallon, the cost for fuel will drop to $73.33, representing a net saving of $18.20.

Of course, the saving in this case is not very large, but that very much larger savings really can be effected is made very plain by one carburetter manufacturer who has gone to the trouble to find out and to publish figures which are nothing short of remarkable. In one case, where the average miles per gallon of fuel was only 7, this was increased to no less than 16½, saving some 58 per cent. in the cost of fuel; in dollars and cents it amounted to $154.25. In another case, the mileage was doubled and the actual saving effected was $94. In each case the amount of fuel was the same and represented one year's consumption.

It is true that manufacturers fit to their cars carburetters that may be expected to realize very nearly maximum efficiency. But the fact remains that commercial gasolene is getting heavier, and the heavier it gets the more air will be required to effect complete combustion. Cars which a few years ago could and did average better than 15 miles to the gallon of fuel scarcely can be expected to maintain so high an average under present conditions.

The remedy is not wholly out of reach. If it is possible to so alter the adjustment of the carburetter as to permit a greater proportion of air in the mixture without seriously impairing the efficiency of the device over the whole range of engine speeds, the solution of the problem will be forthcoming in the majority of cases. But no carburetter is absolutely automatic in action over the complete range of engine speeds; there are critical speeds at which its efficiency will be high, just as there are critical speeds at which its efficiency will be low. In such cases, it often is possible to increase all-around efficiency by the addition of one of the various auxiliary air valves which within a comparatively short time almost have become epidemic. As a final resort, it may be necessary to fit a new carburetter in the place of the old one, and in the case of old cars this generally is a wise proceeding, for the reason that carburetter development has made great strides within the past few years, and the best performance of many of the old types scarcely is as good as the worst performance of modern devices.

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TOPICS TO BE DISCUSSED AT N. A. A. M. CONVENTION

Speakers Selected for Detroit Meeting and Subjects Assigned—Short Sessions to be the Rule During Three Days.

It will be no ordinary meeting that the National Association of Automobile Manufacturers will hold in Detroit on November 13, 14 and 15. Rather it will be more in the nature of a convention in which the usual routine will be so far departed from that several papers dealing with subjects of moment to the trade will be presented by men competent to handle the topics assigned to them.

The arrangements for the convention are in the hands of a committee made up of the following Detroiters: R. D. Chapin, S. D. Waldon, W. C. Leland, Hugh Chalmers and W. E. Metzger, and H. W. Ford as secretary.

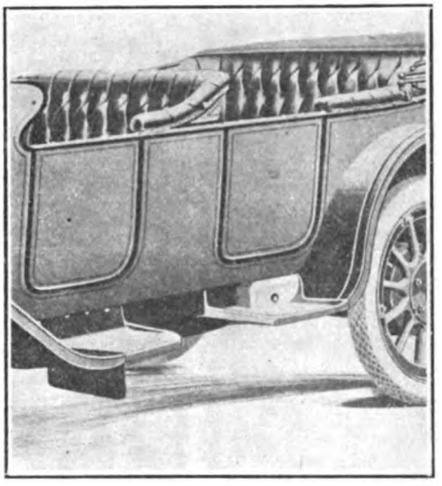
The headquarters of the convention will be at the Hotel Pontchartrain. The proceedings will open with a meeting of the executive committee on the afternoon of the 13th. The first session of the general meeting will be held at 10 A. M. on the 14th. There will be another session in the afternoon, and in the evening the members will be the guests of the Detroit manufacturers at a banquet at the Pontchartrain. There will be two business sessions on the 15th, the next day being left open for visits to factories and other points of interest. Each of the business sessions will last about two hours.

The papers which will be read are as follows: "Yearly Models," by C. C. Hanch, Nordyke & Marmon Co.; "Some Selling Problems," Hugh Chalmers, Chalmers Motor Co.; "Multiplicity of Models," G. W. Bennett, Willys-Overland Co.; "The N. A. A. M., What it has Accomplished and What Can be Accomplished," S. A. Miles, general manager; "The Commercial Car," S. D. Waldon, Packard Motor Car Co.; "Relation of the Volume of Motor Carriage Business to the Volume of Commercial Car Business," David Beecroft, editor Motor Age; "Injudicious Methods of Selling Commercial Vehicles," M. L. Pulcher, Federal Motor Truck Co.; "Traffic," J. S. Marvin, traffic manager N. A. A. M.; "Why all Manufacturers Should Use the Standard Warranty," Walter C. White, The White Co.; "Territory and Discounts," E. R. Benson, Studebaker Corporation; "Good Roads," R. D. Chapin, Hudson Motor Car Co.; "Labor Conditions," H. M. Leland, Cadillac Motor Car Co.

It is estimated that the attendance at the convention will represent 80 per cent. of the country's automobile production, which implies that the gathering will be uncommonly representative of the industry.

Little Known Features of Well Known Cars

There's no chance to "clutter up" the running board of an Oakland car, for the very simple reason that there is no running board. In place of that time-honored adjunct, two large steps are provided, one in front of the entrance to the driver's seat and the other positioned where it is most convenient for the use of those who ride in



OAKLAND SEPARATE STEPS

the tonneau. By way of preventing mud and water from splashing over the rear step, a leather apron is hung under the front step, which intercepts the dirt which is thrown from the front wheel.

As for the accessories in the shape of spare tires, gas tank and tool box, which usually are positioned on the running board, other locations have been found by the designers of the Oakland which are more advantageous, in that they are not so prominent and consequently do not mar the appearance of the car to so great an extent as when they are positioned on the running board. The tires are carried on the rear, as has been usual with the Oakland for some time, and the gas tank also is placed in the rear next to the fuel tank. The tool box is positioned where it is readily accessable by the man who has to use its contents, under the driver's seat.

"National Association" in Asbury Park.

Without having learned what the wild waves are saying, A. L. Bowers and Stedman Applegate, of Asbury Park, N. J., have organized the National Automobile Owners' Association. Like practically all of its many similarly named predecessors. Asbury Park's "national association" proposes to sell accessories to car owners at cost prices and otherwise to point the way to the millennium.



November 8-16, London, England—Society of Motor Manufacturers and Traders' annual show in Olympia Hall.

December 7-22, Paris, France—Paris Salon.

January 6-11, Cleveland, Ohio—Cleveland Automobile Show Co.'s exhibit in the Central Armory.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, Philadelphia, Pa.—Philadelphia Automobile Trade Association's exhibit in the First and Third Regiment Armories.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

January 27-February 1, Detroit, Mich.—Detroit Automobile Dealers' Association's show in Wayne Gardens.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

February 10-15, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Commercial vehicles only.

February 10-15, Minneapolis, Minn.—Minneapolis Automobile Show Co.'s show in the National Guard Armory.

February 17-22, Kansas City, Mo.—Kansas City Automobile Dealers' Association's show in the Convention Hall.

March 3-8, Pittsburgh, Pa.—Pittsburgh Automobile Dealers' Association's show in Duquesne Garden.

March 17-22, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's Show in the State Armory.

March 24-29, Indianapolis, Ind.—Indianapolis Automobile Trade Association's show.

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SOLUTIONS OF THE USED CAR PROBLEM

In Competition for Motor World's Cash Premiums of $50, $25, $15 and $10 for the Four Best Articles Dealing With the Subject.

By MILTON SANDMAN, Brooklyn, N. Y.

In my experience of six years with used cars, I do not see why there should be alarm over the problem of their disposal. The demand for such cars always has been good, and this year has been brisker than that for new models.

The whole trouble lies with the new car dealers, any of whom will allow at least $100 more than a used car is worth to sell a new one over a competitor or to prevent their customer from buying a car of a different make. The used car is then turned over to a second-hand dealer or to the "used car department," where it is held at an exorbitant price and lies on their hands a long time.

There is ready sale for any used car that will run, if it is sold at its real value; but it is a recognized fact that a popular priced car depreciates 50 per cent. the first year and 25 per cent. for each succeeding year, and at this rate almost any car, except it is a mechanical failure, is easily saleable. But, on the other hand, the United States Motor Co. sold a Mr. S—— a Maxwell car for $1,150 and offered to allow the full amount a year from date on the purchase of a new Columbia. Another company selling a car for around $1,400 offered to allow a friend of mine $750 on a Hupmobile runabout which was two years old and which cost originally only a few dollars over that figure.

As soon as this method of doing business stops the used car problem will be solved. A high grade used car is easily sold; it is fairly well known that if it has been properly handled and taken care of it will outwear a new cheap one. The buyer of a used car is usually an engineer or a sound business man who knows that there has been no real advance in automobile construction in the last four years, with the exception of the self-starter, and any engineer will admit that there is better material and better workmanship in the "old boats" than in many of the new cars.

One solution of the used car problem is to have a central exchange, maintained by the new car dealers, who will appraise the cars which are to be taken into trade and a uniform rate will be allowed by any concern taking used cars in trade. Then a buyer will not have to shop around so much and fall into the clutches of a "second-hand shark" who doctors old cars up instead of overhauling them and represents '08's as '11's, which is putting the automobile business in a class with highway robbery.

The population of the United States is large enough to absorb all the used cars until they finally reach the junk heap, not to mention the number which are turned into delivery wagons for merchants.

By MARK H. HARIG, Cincinnati, O.

The rapid increase in the number of automobiles used as taxicabs and delivery wagons suggests a method which should be of considerable assistance to the dealer in getting rid of used cars. Most of the used cars that are given in part payment for new cars are disposed of not because they are worn out, but because their owners believe they must have the latest, up-to-date models. Such traded-in cars usually run fairly well and are capable of giving good service for a considerable time. Few of the prospective purchasers who come to the dealers want second-hand cars, however; they want new ones.

My idea of the solution of the problem of what to do with these cars that nobody seems to want is to turn them into taxicabs and delivery cars. For such purposes used cars will serve very well, because the matter of appearance is of no particular importance. The machines are used for business, and there is no demand for style or showiness.

I believe that the number of second hand cars thrown upon the hands of the dealers could be considerably reduced by the abandonment of the yearly model plan; it is a nuisance, and no material good ever can come of it. There is no reason why manufacturers cannot add improvements in design, construction or equipment at any time they may see fit, without waiting to get out the next year's models.

There are many people who purchase a new car every year merely because they feel that they must have the very latest model. If, however, there were no yearly models, there would be no such hurry to abandon a good car, and the lure of advertisements in large letters, reading, for instance, "1913 models just arrived; come in and see them," would not be working to keep our car owners jumping from one machine to another, to the embarrassment of the overloaded dealer.

Another possibility in the disposition of used cars would be to ship them out West, where the farmers and ranchmen are rapidly taking up the motor car. These people want good, serviceable machines; but they have not yet been attacked by the craze, as it might be called, for owning the very latest, up-to-the-minute models.

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TASK SYSTEM OF ORGANIZATION AND ITS BENEFITS.

There is a heap of difference between the results achieved by a number of units working independently and the "systematic union of individuals working together for a common end." There is absolutely no choice as to which is the best method Organization methods are so far superior and bring so much greater results that every dealer who understands them will hasten to employ the organization or "family" idea.

Some dealers have a large number of employes, but absolutely no organization—that is, no systematic union working together. Such dealers should study the methods of the big factories—the supremely successful ones—and they will find the secret of efficiency in every case due to the working out of the organization idea.

Possible Even with Small Staff.

Supposing there are only four or five employes; can the idea be worked? Yes, it can be worked where there are only two. The basic idea of an organization is to have every man in the right place—each individual fitting into the scheme of things and doing his part. It means definite plans in which all have a share; it means a weekly conference in which all take part—in which each one has a chance to express his views and give the house the benefit of the past week's experiences. It means a discussion of the knotty points in salesmanship, a better understanding of the store policy and methods. A friendly but none the less sincere, earnest and enthusiastic interest in the welfare of the institution as a whole. It means the employment of the "task system"—that is, the getting together of the sales force and laying out what must be accomplished for the month and the placing of individual responsibility in the carrying out of the "task."

This "task" system works wonders. Where it is employed everybody knows what the plans are—everyone is working toward the accomplishment. Each day's reports show daily progress — each weekly conference shows what remains to be done —and with this sort of planning no one shirks because each one knows what the other has set himself to do and there is a spirit of competition that soon leaves the drones so far behind that they are automatically sifted out. On the other hand, by imparting correct ideas of vigorous, systematic work, it will open new chances to the energetic and resourceful.

MODERN METHOD OF CONDUCTING DEMONSTRATIONS.

Walter Bemb, of the Bemb-Robinson Co., of Detroit, and who sell Hudson cars, has clean-cut, positive, modern ideas in reference to store management.

Demonstrations run on schedule time are part of the Bemb-Robinson plan, but the salesmen do not drive the demonstrating cars; they are regarded as salesmen, not chauffeurs. They dress neatly and sit in the back seat with the prospective purchaser.

Uniformed Driver Demonstrates.

"While I am a fairly good driver," said Bemb in discussing the subject, "and have driven a car for years, I found that I could not keep my eyes open for the traffic officers and for the approaching and crossing vehicles and at the same time deliver a selling talk to the prospect. Therefore we inaugurated the plan of having a special "chauffeur" or driver properly uniformed. He does all the driving and has complete charge of the demonstrating cars. These are washed and polished every night. The chauffeur is responsible for keeping them tuned up, and, as he alone does the driving, and the cars are never driven at night, it is possible to keep them in the "pink of condition" that insures successful demonstration.

"True, this plan costs a trifle more, but it is much easier on the cars and results in an ideal demonstration. It also permits the salesman to call at the office or home of a prospect well dressed, clean, and looking like a gentleman, instead of wearing a pair of gauntlets and a set of goggles, like a cross between a maniac and a chauffeur.

Concentrates Mind On Customer.

"Another decided advantage of our plan is that it places the salesman on a proper footing with a customer. We found that many people unconsciously treated the salesman who drove as a sort of superior chauffeur. Our plan places him on an entirely different footing, and enables him to devote his mind and his time to the possible buyer, and when a salesman steps up to the office of a prospect and says, "My man is waiting outside with the car," it makes a pleasing impression that has a permanent selling value.

Each Demonstration Is Scheduled.

"All demonstrations are mapped out and listed on the board in the garage. The car is ready to go on duty at eight o'clock and, for example, one salesman may have a demonstration arranged for between eight and nine, and another one between nine and ten. In each case the demonstration is planned so that it ends on time to make the next one according to schedule. You can see at once that this cuts down the number of cars required for demonstrators and at the same time makes salesmen plan carefully for the best use of their time.

Porter Uniformed in Khaki Suit.

"Another little point that makes a hit is the uniforming of our porter. We provide him with two Khaki suits with the Hudson Triangle on the arm, and each Monday morning he puts on a clean suit. Instead of a dirty looking attendant, we have at slight outlay, a clean, smartly-dressed man who takes pride in his appearance."

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PATRONS ATTRACTED BY MAKING STORES ATTRACTIVE.

An up-to-date salesman stepped into the store of a Baltimore automobile dealer and, after securing an order, he turned to the dealer and said: "Mr ———, you have known me for a long while, but this is the first time you have given me an order, and at the risk of losing it I am going to tell you something. I hope you will take it in the spirit in which it is offered. Your store does not look like the store of a merchant. It is dirty. It is unattractive in every way. It has no conveniences for ladies. It looks just as it did four years ago. You have made no improvements, and you are suffering because of it.

Few Dollars Well Spent.

"Now, I am going to make a suggestion. Spend from three to five hundred dollars fixing up the place. Get the walls and ceilings tinted neatly with some soft color; get some paneled effects in mission woodwork—a few mision chairs of good quality—a good looking table for these papers and some new lighting fixtures for the show rooms and a new desk for yourself. You will be surprised to see how much energy and enthusiasm you will obtain from having new, up-to-date appointments, and you'll get a class of trade that now passes your doors but does not enter."

At first the dealer did not relish the suggestion. But he knew that the salesman was right, and he did not cancel the order but actually thanked him for taking an interest in his business.

Salesman Receives Dealer's Thanks.

Some sixty days later the salesman got a letter from this dealer saying: "Next time you are in Baltimore be sure to come and see me. After thinking the matter over, I followed your suggestions to the letter and already can see the results. People who never came near me before are now dropping in. We are getting a class of buyers who used to pass us by. Thank you for the suggestions—and next time you are in Baltimore you are my guest."

Neat, Clean Stores Attract Buyers.

"He that would catch fish must venture his bait," says Poor Richard—and, like most of his sayings, there is a world of truth in it for the business man.

There are automobile dealers who are so close-fisted that they never get any bait on their hook at all; some have been known to be even too close or too careless to remove from their windows the worn lettering, advertising a line of cars long since passed out of existence. Is it any wonder things don't come their way?

One kind of bait that costs little is the neat, clean store.

Hardware dealers who ten or twelve years ago were the laughing stock of merchants in other lines to-day have uniformly the best window displays and the best window fronts of any class of merchants in the countrty. Instead of being mere sellers of nails, they have put in varied lines of goods that once were never seen in a hardware store, and they keep their windows clean. Even the smallest town one enters has its prosperous, attractive hardware store.

Study Windows of Hardware Trades.

Automobile dealers can study the hardware dealers' progress with profit. Clean windows, clean floors, dustless woodwork, attractively planned show rooms are tempting bait for the prospect, but they mean an outlay of money both for the original investment and for the upkeep. Does it pay? Did you ever hear of a merchant who lost money by increasing the attractiveness of his store?

Now is the time to make your plans and have the work done. Look over your store and see what improvements can be made. Then have them done as quickly as possible. The clean, well lighted, well appointed store attracts patrons as naturally as the dirty or dingy store repels them.

YOU PAY FOR SHOW WINDOWS; WHY NOT USE THEM?

When automobile dealers—and dealers in accessories, too—awaken to the fact that store rents are based upon the opportunities afforded by proper use of window display space, they will realize the full meaning of "wide awake merchandizing" and make the most of the very opportunities for which they pay a high price. At present it is so utterly neglected that the dealer who is putting brains, time, and study into window displays stands out "like a skyscraper in a village of wooden shanties."

"Automobile Row" in Toledo, Ohio, certainly is no better, and perhaps no worse, than the "rows" of other cities in this respect. Dealers pay large rents to get on Madison avenue. It is a main thoroughfare and probably more automobiles and more people able to buy automobiles go up and down that avenue than any other street in Toledo. Yet, for every store that is utilizing the opportunities that accrue from this steady traffic there are five who are permitting them to go to waste.

Money Lost Through Neglect.

One instance will suffice to carry the point: In the very heart of this Toledo automobile center is a store with two generous windows. What do the thousands who pass by each day see? If they drive by they see nothing. If they walk past their attention is challenged by the emptiness of the windows. Looking carefully, however, they discover that the windows are not really empty. The window on the right displays two photographs of trucks, so fly-specked as to be disgusting; an old picture of Kubelik, a battery box (dusty) and a railroad timetable. The opposite window, frosted with flyspecks, housed a list of ancient bar-

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gains in second-hand automobiles, a coil box, a tire iron and a card advertising the local industrial exposition. This card had a veritable border of fly ornamentation; it looked as if it had been in the business all summer. Inside was one used car being polished. This detailed description is not exaggerated in the slightest degree. The window probably looks the same now. It was that way three weeks ago.

Inside, the floor was clean—except where oil had dripped from cars. Evidently no floor pans had been used. None were in evidence. The office was small and dark.

When this dealer becomes a real merchant the windows will be cleaned regularly and kept so. Cards will be clean and renewed occasionally or put under glass in a frame. It is said this man is wonderfully particular about having his demonstrators spotless. But he should not stop there, for people will look at his store as well as at the demonstrators, and both weigh up in the judgment made.

He may have done a good business, but how many sales has he failed to make because of this negative influence? It may make the difference between real cream and skimmed milk. He may have had to cut a price when with attractive surroundings and the correct background and atmosphere for his work it could have been maintained. People may have given his car second choice when it might have been their first one.

ONE FORM OF GARAGE EFFICIENCY

Inefficiencies, according to Harrington Emerson, the efficiency expert, include all forms of lost motion or waste of any kind, whether it be in labor or materials, in the garage or in the salesroom or anywhere in between.

An example of inefficiency in the garage is typified by the following: "Say, Bill, where is that jack?" "I don't know; you had it last." Then both commence to look for it. Two men each took seven minutes, or one quarter of an hour, at 60 cents an hour, to discover the jack necessary to make a tire chance for which a charge of 25 cents was made.

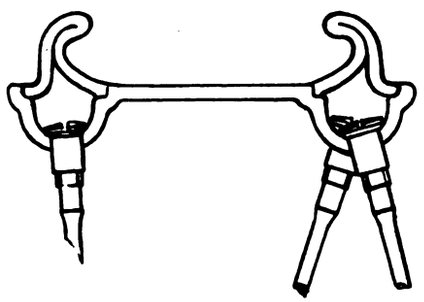
"A place for everything and everything in its place" is a simple form of garage efficiency that brings results.

Waste space is an inefficiency. Every foot of space costs money. It should be made to yield a profit. The placing and arrangement of cars, so that the greatest number can be accommodated—so that cars can be easily moved out or in and the arrangement that sets the limit of space for every car so that a regular customer knows his place by number and gets into it—no crowding and no waste space.

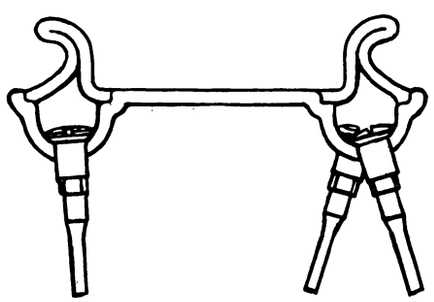
WIRE WHEEL MAKER ADDS NEW RIM FOR Q. D. TIRES

McCue Device Facilitates Tire Replacement and Also Increases Strength of Wheels—Felly Is Perfectly Flat.

Although it is one of the plain advantages of the detachable wire wheel that the wheel can be removed and another, mounting a fully inflated tire, put on in its place in short order, it is logical that even that advantage should be carried further, which means, briefly, that it should be easy also to replace the tire on the wheel. And in order to effect the conclusion, the McCue Co. of Buffalo, N. Y., which is so ably



McCUE WIRE WHEEL Q. D. RIM



SHOWING THE RIMS REVERSED

both fathering and mothering the wire wheel in this country, has developed for its wire wheels a new type of quick detachable rim which is calculated to increase materially the efficiency of the wheels in addition to rendering easier the changing of tires.

The principal characteristic of the new method of construction, as may be seen by the accompanying illustration, is that the portion of the wheel presented to the tire is perfectly smooth and flat, the theory of the design being plain in that the possibility of either tire or tube being cut or abrased by reason of more or less sharp projections is obviated. Incidentally, the intimate contact of the tire upon the smooth, flat surface tends to increase the coefficient of adhesion and thereby minimizes the danger of the loss of the tire under unusual conditions, such as might obtain on exceptionally rough roads.

In order to obtain the flat surface upon which the tire is fitted, the grooves to which the outer ends of the spokes are attached are rolled in the rim, which construction has the further advantage that it adds a considerable degree of stiffness to the finished product. The rolled grooves also increase the surface of the rim exposed to the air, which serves to assist in the heat radiation upon no little of the reputation of the wire wheel as a savior of tires is based. At the same time, the stiffening which results as an effect of the rolled grooves permits the construction of an exceptionally light wheel in which the factor of safety nevertheless is high. Naturally, provision for quickly and easily changing tires without the necessity for employing demountable rims, which, in a sense, defeat one of the objects of the wire wheel, also reduces the weight of the wheel at the periphery, thereby minimizing the effect of gyroscopic action and lessening the punishment to which the tires are subjected. In common with other types of Q.D. rims, the new McCue rim is reversible, to accommodate either straight-sided or clincher type tires.

Salesmen's Courtesy that is Unreal.

Many salesmen in the automobile trade acquire reputations for courtesy which, however, are not to the manner born but which are due to disinclination of car owners who are seeking new purchases to make known their identity. Very many such prospects are loth to give their names and addresses for fear of being thereafter pestered by the polite but importunate salesman. The latter, however, generally is equal to the occasion and attains his end, and at the same time impresses himself favorably on the prospective buyer.

Usually he escorts the man or woman to his or her car, which may be waiting outside the salesroom, and as often as not opens the door for him or her to enter, which act of courtesy frequently is more apparent than real, although it rarely fails to make a good impression. The real object of the salesman in doing such escort duty is to obtain a record of the license number displayed on the old car, which renders it easy to identify the prospect. When the salesman does not thus obtain the identifying number, some one else connected with the establishment performs that duty.

Decomposition Causes Combustion.

Spontaneous combustion is by no means an imaginary or even a particularly unusual phenomenon and is liable to occur wherever inflammable substances are subject to decomposition, which generates heat, under conditions which do not permit the ready dissipation of the heat.

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REILLY'S ATTEMPT AT "DICTATED BUT NOT READ"

Evolves a Conspiracy Against the Sales Manager and Tells What He Thinks of Transacting Business with Stenographers—Also Criticizes the Man Who Hasn't Time to Sign His Letters.

"What the ——!" puzzled the Sales Manager.

He had read the letter twice, but he started to peruse it for the third time. Each time everything read smoothly and was intelligible until these concluding lines were reached: "I don't think the car is any good, but I'll see you after the blowout. Equip with electric horn. Will you be alone?"

The letter was followed by the signature of Reilly, and the major portion of it clearly concerned an order for a car, but the rest was mystifying; also, contrary to custom, at the lower left corner were the words, "dictated but not read."



"WHAT THE ——," PUZZLED THE SALES MANAGER

Reilly's Inexplicable Letter.

"Car isn't any good—blowout—electric horn—be alone," mused the Sales Manager. "What's got into Reilly, anyway? 'Dictated but not read,'" he continued slowly. "Something must have upset the old baldhead's mind when he sent this; it's too deep for me," he concluded, as he gave up the puzzle. "I'll ask him what it means when I go down to-morrow."

Reilly just had finished dictating a sheaf of letters the following morning when the Sales Manager appeared at the salesroom door. The two exchanged their usual friendly greetings and then, as the Sales Manager continued to stare critically at Reilly, as if he expected the latter to break into violence or something similar, the dealer exclaimed: "What are you looking at? What's the matter with you this morning?"

"Gee! but I'm glad to see you're all right!" exclaimed the Sales Manager. "Really, I'm glad."

"Better be glad you yourself are all right," was the response, "for you don't act as if you were. What's the trouble now?"

For answer the Sales Manager laid upon Reilly's desk the mysterious epistle of the day before. Reilly scanned it. "Well, what of it?" he asked as he read it. He then spent several minutes in silence as he tried to stagger through the vague paragraph near the end, but all the time there was a twinkle in his eye which, could the Sales Manager have seen it, would have led him to believe the mystery, at least in Really's mind, was very easy of solution. But the Sales Manager didn't see it.

Sales Manager Demands Explanation.

"H-m!" said Reilly. "Well," he finally exclaimed emphatically as he straightened up and pushed the letter back to the Sales Manager, "that's what comes of trying to be too up-to-date. More of the old-time stuff for me. I'm afraid I can't follow the pace."

"What's the answer?" asked the Sales Manager. "What do you mean by sending an order for a car that reads like that? Were you trying to 'kid' me, make a date with me, or what?"

"Neither. Straight business," said Reilly. "You see, it's like this," and as he continued the Sales Manager did begin to suspect that he was being "kidded," or, as the jovial Briton says, "spoofed." "It is all because I thought that stunt of yours about dictating letters but not reading them was fine up-to-date business, so I tried it the other day when I was busy, just to see if it would help me or work out to advantage. But never again! You see what happened."

Reilly Attempts to Explain.

He pressed the button which summoned the office girl and showed her the letter. "How did you come to write this?" he asked. The girl, just as if the affair had been rehearsed beforehand, gave her explanation. When he dictated the letter, Reilly, she said, had been telephoning to a friend about a combined business and pleasure engagement and she evidently had taken down words that Reilly never intended to go into the letter. Also, she added, she must have been absent-minded when she permitted them to get into the letter. But at the end she tittered a little and the Sales Manager blurted out:

"O, come off! What's the idea? I'll bite. You did that on purpose, the two of you." As he said it he grabbed a handful of freshly written letters from Reilly's desk and not one was marked "Dictated but not

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read." One, however—and it was addressed to the Sales Manager—was marked "Signed in the absence of Mr. Reilly." Also it contained a clause just as mystifying as the letter which had caused the trouble.

The Sales Manager looked incriminatingly at Reilly and waited for an answer.

"Yes, Jim, I'll admit it. It's a put-up job. I did it as a gentle and covert way of expressing what I think of the way you write letters."

Criticizes the "Boss's" Letters.

As he spoke Reilly lifted from the correspondence files a bulky bundle—it was correspondence from the factory—and at the bottom of almost every letter appeared the rubber stamp "Dictated but not read." Another bundle—letters from a tire factory—were much the same.

"Did you ever stop to think, Jim, how a man might regard this style of doing business?" asked Reilly. "You come down here and I go up to the factory, and we meet on a more or less common level and chat like a couple of chums. But when you write me letters you haven't even consideration enough to give them your attention. You dictate them and half of them are signed by your stenographer and ornamented with this rubber stamp. Suppose I came to see you and, instead of seeing me, you sent the stenographer to talk to me and to convey messages which you had entrusted to her, while you never even troubled yourself to ascertain whether she handed me the correct information.

"Suppose you came down here and I did the same thing. You stroll in, for instance, and I walk into the repair shop and leave you here to talk over your business with the office girl. She probably could do it all right; but how would you like it?"

"She's a nice girl," commented the Sales Manager.

About Shifting Responsibility.

"Yes; but all joking aside, you wouldn't like it. And I don't like this way a lot of business men carry on correspondence. To my way of thinking it's absolutely offensive. And as I feel in the humor and as you invited it, I mean to give you a curtain lecture and, in advance, I forbid you to get warm under the collar. The company pays you a salary and expects you to do your duty by the company. You are supposed to be one of the principal mediums between the company and the general public. You are supposed to preserve a good front and to so handle your dealers and other men that the concern will be well thought of. You are supposed to do the right things and to be sure you are right in the things you say and do; yet here you are shifting a lot of work onto a girl who probably might be pleasant enough in personally greeting your clientele, but do you suppose the company would want a slip of a girl for a Sales Manager?

"Every time I get a letter like this one I'm inclined to think the man who sent it is lax in his affairs or doesn't care about the little details of business. In your case I know it is not so. You have seen other people do it, you probably have a stack of such letters in your files, and you have fallen into the habit. Instead of sticking around a half hour later at night you sign the letters without reading them or else the girl signs them.

Overworking Stenographer Unfair.

"Suppose something went wrong. Who's to blame? The girl, of course. She's getting, maybe, ten dollars a week and needs the money. If it was a serious mistake she'd lose her job. Then who'd be to blame? You, of course. She needs the money, and it isn't fair to make her carry so much responsibility when you are drawing a good salary for assuming it. Neither is it fair to the company for you to be slipping out from under part of the work you are supposed to be doing so well.

"To get from the factory viewpoint to mine—it makes me 'sore' to be treated with so little consideration. In a final analysis it comes down to a point where I am correct in assuming that your mental attitude is, 'Huh! it's only Reilly; I won't waste much time on him. I'll dictate what I have to say and trust to the girl to do the rest. If she gets it right, it's all right. If she doesn't—O, well, we'll fix it up some way.' You probably never have stopped to think that I might see it that way, but that's the way it looks to me.

Other Things Which It Suggests.

"These 'dictated but not read' letters always remind me of the 'E. & O. E.' excuse which accountants place on statements they are paid well to compile beyond suggestion of error or omission. 'Dictated but not read' on letters is as silly, Jim, as if the factory turned out cars bearing the nameplate 'built but not inspected' or 'inspected but not guaranteed.'

"Also, these guys who can't stick around long enough to sign their mail—they must be awfully busy men. 'Signed in the absence of Mr. So-and-So.' Huh! Sounds to me as if they made a wild dash into their offices, grabbed up a bunch of letters and telegrams, ripped them open, scattered things all over the desk, dictated answers to three girls at once and then made another wild rush across the country, leaving the letters to be 'signed in the absence of Mr. Busy Guy.' That guy needs an assistant—a very capable assistant, maybe two—or three. He ought to have enough, that's sure.



"STOP !" CRIED THE SALES MANAGER, "I'LL REFORM"

Sales Manager Capitulates.

"I wouldn't feel so badly about getting a letter from an Assistant Sales Manager, but when I'm turned over to a stenographer I quit. If you want to appear really im-

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portant, Jim, why don't you get your stenographer a 'secretary' or 'private secretary' stamp and let her sign the letters with her own name. That will make people believe"——

Sales Manager Promises To Reform.

"Stop!" cried the Sales Manager, as he held up both hands with an assumed air of subjugation; "I'll reform. I'll read 'em all. I'll sign 'em all. I'll"——

"O, don't get 'sore'! I had to get it out of my system, and also I thought it would be doing you a good turn to give you a straight tip. There really are a lot of men, Jim, who feel like I do about it."

"But where, Reilly, did you get the grand idea about sending me that 'bunk' letter there?"

"That?" and Reilly laughed. "Where does a man always go when he wants a scheme that is clever and can express more concealed sarcasm and get-even-ness than he can produce himself? A woman, of course! The office girl is the mother of that. She's a regular diplomat. Isn't that so?" he asked her, as she passed through the office.

"Certainly it is," she answered, never stopping to find out what it was she was called upon to verify.

One of the Disadvantages of Kerosene.

Despite the manifold advantages of commercial kerosene as a fuel, the fluid still has one marked disadvantage with which all users of kerosene lamps at one time or another have become familiar. Kerosene has a predilection to "creep"—to ooze out of almost infinitesimal openings and spread over everything it touches. Undoubtedly capillary attraction and the slow rate of evaporation has much to do with this undesirable property. But just as frequent and scrupulous cleaning has served to maintain kerosene lamps free from this kerosene "dew" which collects and encourages accumulations of dust and dirt, so may the same methods be expected to be efficacious in the case of the automobile—whether the application of the kerosene is to the lamps or to the carburetter.

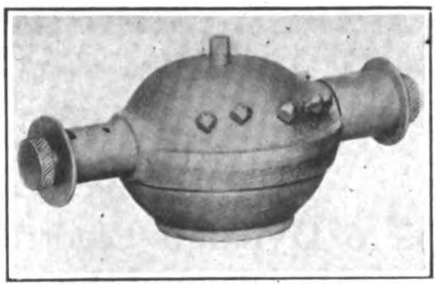
Paper Bags as Fire Extinguishers.

In the testing room of the Franklin factory in Syracuse, N. Y., there is utilized a fire extinguisher which is so simple and inexpensive that it well may be adopted by every garageman or repairman in the country. Instead of the sandbox which usually is required by law, the Franklin people suspend large paper bags filled with sand at various convenient points on the premises. In the event of fire, the application of the sand is very effective.

OSCILLATING FLOAT THAT CONTROLS MULTIPLE JETS

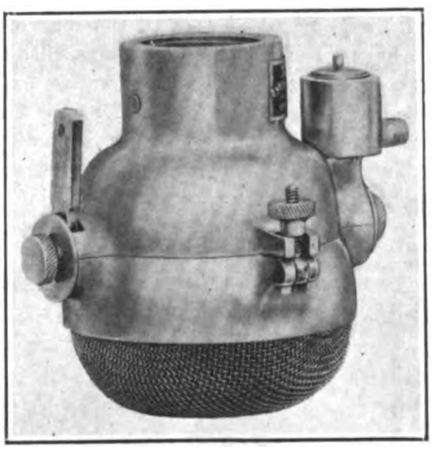
Radical Feature of A. B. C. Carburetter—Is Also Devoid of Air Valve and Proof Against Back Firing.

To produce a carburetter capable of thoroughly incorporating gasolene and air in unvarying proportions without regard to the engine speed and climatic changes, has been the object sought through channels many and diverse by those who have to do with the design and production of such de-



A. B. C. DETACHABLE FLOAT CHAMBER

vices, but rarely does an article of the kind come to light wherein the object is claimed to be attained with an entire absence of adjustments other than the orthodox and obviously necessary throttle. Such, however, is the claim made for the A. B. C. carburetter which just has been placed on the mar-



A. B. C. CARBURETTER, SHOWING SCREEN

ket by the International Accessories Mfg. Co., of 115 Broadway, New York City.

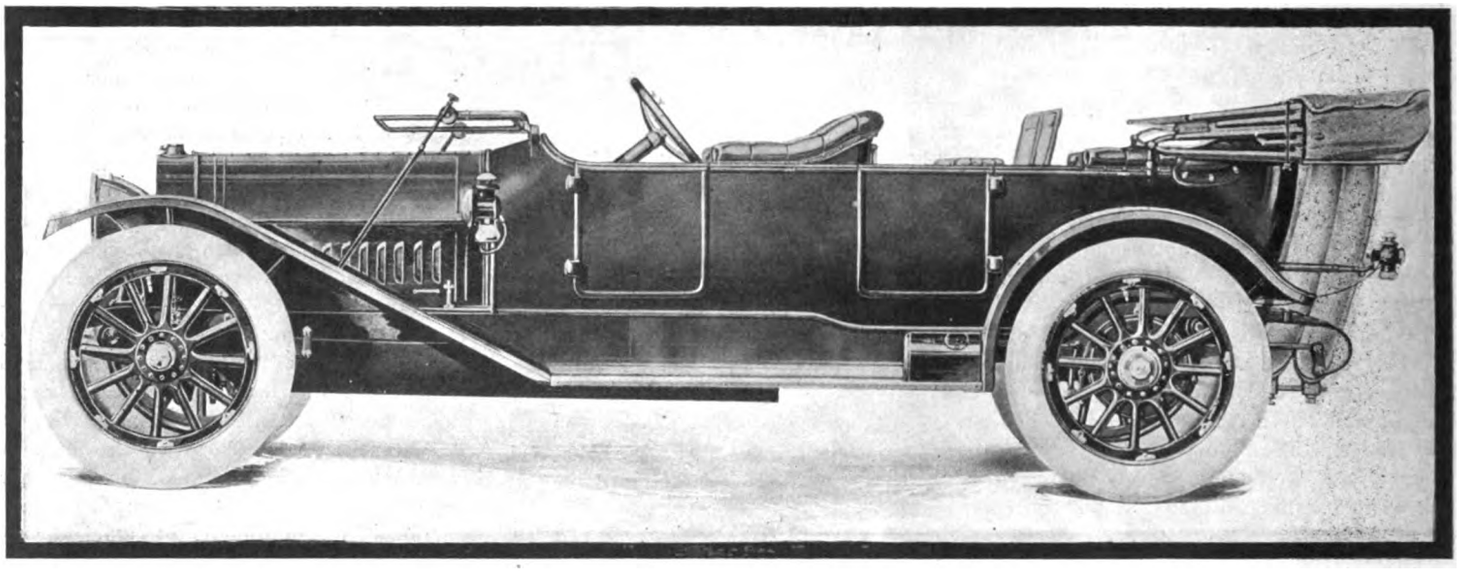
In principle, the carburetter is a multiple jet device, but to use a simile more expressive than apt, it is as unlike other carburetters of the type as chalk is unlike cheese. The float chamber, which is shown in one of the accompanying photographs, instead of being placed around the mixing chamber is trunnioned inside the chamber, and linked to the throttle so that it moves with the latter. Ordinarily, when the motor is operating on low speed, the float chamber is level, and the level of the fuel contained in it just reaches above the stem of one of the five jets which are positioned on one side of the chamber, so that at low speeds only the single jet is in action. As the float chamber is tipped, due to its being linked to the throttle, the stems of the other four jets are immersed in succession, for not only does the liquid creep up along the side of the chamber as it is tipped, but the level of the gasolene is raised by a cam mechanism which has to do with the float and the check valve. A sixth jet which is positioned opposite the five others come into play only when the suction of the motor creates sufficient vacuum in the mixing chamber to draw the liquid through it. All of the air which passes through the device comes into contact with the jets, passing the orifices at right angles so that an atomizing action, which it is claimed results in a thoroughly homogeneous mixture, takes place. The air which passes the jets meets absolutely no obstruction other than that offered by the position of the throttle.

Among the other claims which are made for the carburetter it is stated that flame which is propagated through the device in case of a backfire cannot possibly pass through the double copper gauze which, in the shape of an inverted dome, covers the single air inlet and which prevents the passage of the flame in exactly the same manner as the gauze in a miner's safety lamp, and at the same time prevents the ingress of dust and dirt. The entire apparatus can be disassembled for cleaning without the use of a single tool simply by unscrewing the two thumb nuts which hold the two halves of the mixing chamber together. This permits of the removal of the float chamber, which operation automatically cuts off the supply of gasolene. The fuel pipe itself need not be disconnected when the carburetter is taken apart.

The carburetter is the invention of one Elmer Smith of Bound Brook, N. J., but the device has been developed and brought to its present state during the course of the last two years by the engineer of the company, T. F. McGuire.

The officers of the International Accessories Mfg. Co., which is a $100,000 Maine corporation, are: President, William H. Fleisch, an insurance broker; vice-president, Francis G. Moore, a lawyer; treasurer, Bert K. Bloch, president of the Empire Distillery; secretary, William W. Moore, a real estate broker, all of New York City, and none of whom previously were identified with the motor industry.

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LATEST EDITION KISSEL FOUR-CYLINDER 50-HORSEPOWER MODEL, WHICH IS ELECTRICALLY LIGHTED AND STARTED

KISSEL ADOPTS ELECTRIC ENGINE STARTERS

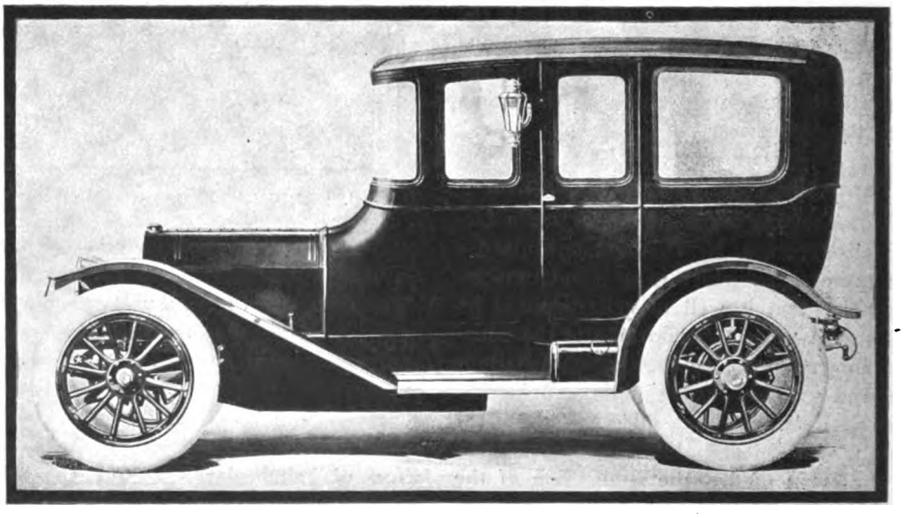
Which Also Means a Complete Dynamo Electric Lighting System—Longer Stroke Motors for Two Models and Larger Bodies Among the Refinements—Timing Gears Replaced by "Silent" Chain.

In common with so many other well-known manufacturers who have seen the light of the times, the Kissel Motor Car Co., of Hartford and Milwaukee, Wis., has increased the value and the serviceability of its products by the addition of a complete dynamo electric lighting and engine starting system, to say nothing of a substantial increase in the dimensions of two of the motors in the line and a general refinement of design, including longer wheelbases and a well-defined endeavor to increase the comfort of the occupants of both front and rear seats.

Increased Comfort a Feature.

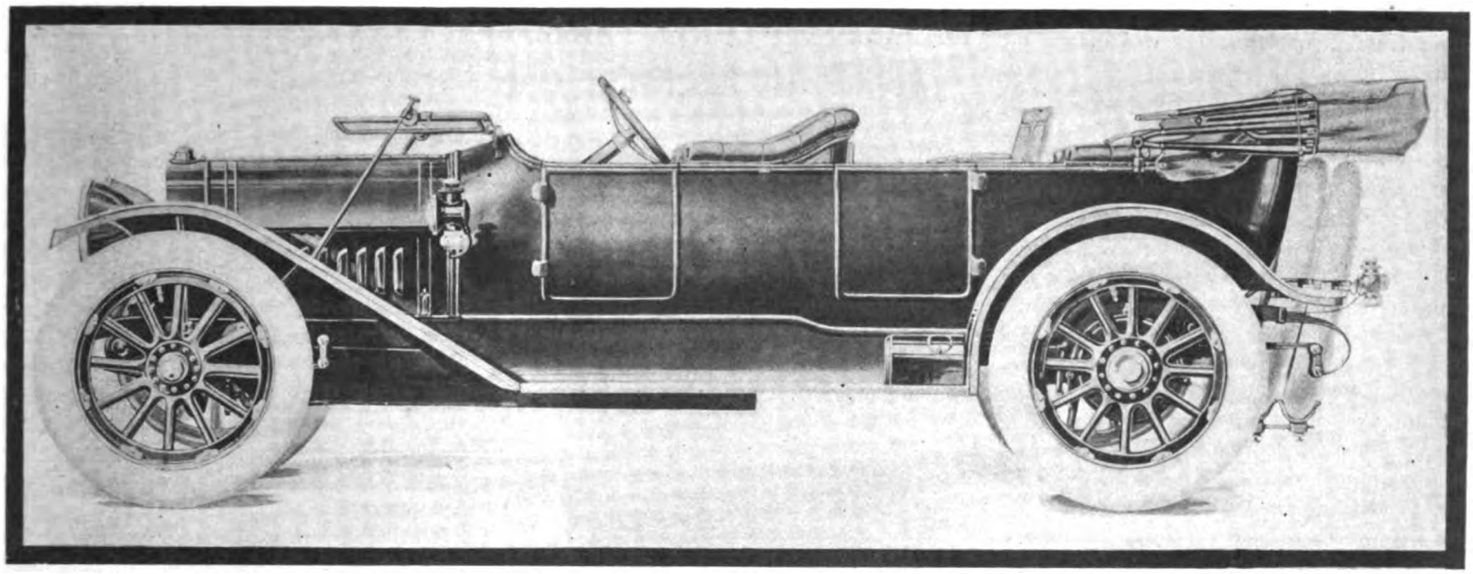
While there may be no hesitation on the part of intending purchasers regarding the quality of Kissel cars, it is conceivable that there might be hesitation by reason of their variety. As heretofore, there are four distinct chassis in the line, three of them being of the four-cylinder variety and mounting motors rated at 30, 40 and 50 horsepower, respectively, and the fourth being a "six," rated, conservatively, at 60 horsepower. On these four chassis there are mounted bodies in such variety as to leave little to be desired either from an esthetic point of view or from the more matter-of-fact point of view of those who desire a particular style of body for a particular purpose. The line is complete from roadster to closed-front limousine, and any of the bodies may be had on any of the chassis.

In seeking to better the line, no little attention has been centered on the bodies and on the chassis in a laudable attempt to increase their easy riding qualities. To this end, the tonneau of each of the four models have been enlarged and the cushions have been increased in thickness to 11 inches in an adaption of the French "commodite" idea. The upholstery is mounted on long, carefully-proportioned springs and the lowness of the seats serves to minimize the effect of side-sway. Naturally, the ease with which a car rides is dependent to a certain extent upon its wheelbase, and for this reason the wheelbase of the three larger models, the 40, the 50 and the 60, has been increased from 118, 124 and 132 inches to 121, 132 and 140 inches, respectively. At the same time, the spring suspension has been refined and supplemented by the addition of shock absorbers both front and rear. Another of the features which tends toward the realization of perfectly comfortable riding and a reduction of running expense lies in the adoption of large size tires, the tires on the four models measuring 34 x 4, 35 x



KISSEL 40-HORSEPOWER FIVE-PASSENGER COUPE, SHOWING BODY CURVES

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SIDE VIEW OF SIX-CYLINDER 60-HORSEPOWER KISSEL IN SEVEN-PASSENGER TOURING CAR FORM

4½, 36 x 4½ and 37 x 5, respectively; demontable rims are standard.

Body Lines Devoid of Angles.

Coincident with the increase in the tonneau sizes, the dimensions of the driver's compartment in all the models also have been increased, and by way of minimizing the operator's discomfort in warm weather, dash ventilators of liberal size have been added. The control pedals have been altered slightly, so as to permit of adjustment to suit the requirements of the tall and the short. In all the body styles, the lines have been given careful supervision to ensure an harmonious exterior unmarred by angles and projecting ends, the effect being particularly noticeable in the coupe and the limousine bodies, in which the hood and short skuttle suggests not a little foreign practice.

Engine Characteristics Retained.

Except for a difference in the cylinder dimensions and the size of parts, all four motors are substantially the same, the distinctive L-head casting with the cylinders in pairs having been retained. The dimensions of the 30 and 50 horsepower motors remain the same—namely, 4¼ x 4¼ and 4⅞ x 5, respectively, although in the case of the other two an increase in size has been made which places them beyond shadow of a doubt in the long-stroke class. The bore in both of them remains the same at 4½ inches, though the stroke has been increased from 4¾ inches to 5½ inches.

"Silent" Chain for Camshaft.

Alterations in the design or construction of the motors are few and far between, and only one of them is of a radical nature. As a means of further reducing the production of unwelcome noises and to increase efficiency the gears which ordinarily drive the camshaft and the magneto shaft have been replaced by a chain of the "silent" variety. The other alteration of note concerns the lubrication system and is embraced in a refinement in the method of feeding the oil which is calculated effectually to eliminate the possibility of smoking while at the same time reducing the quantity of oil required.

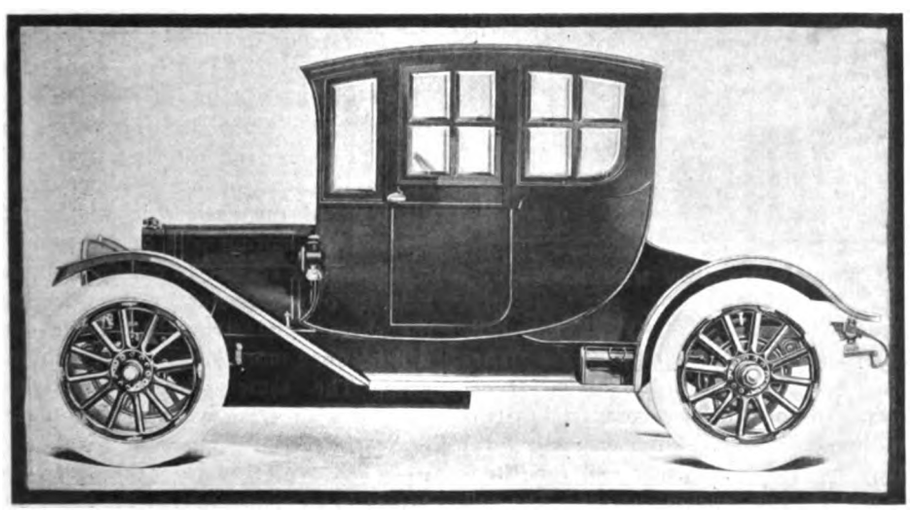
The electric lighting and engine starting which forms an item of regular equipment on all of the cars, though it may be omitted at the option of the purchaser, in which case the list price of the car is reduced by $150, is complete and consists of a Ward-Leonard dynamo, an engine starting motor and a storage battery of liberal capacity. The operation of the starting motor is automatic in the full sense of the word and requires merely that a small pedal be depressed. The capacity of the motor is great enough to permit is to "spin" the engine at the rate of 75 revolutions a minute.

Clutches and Gearsets Unchanged.

In the transmission elements and the running gear little room for improvement has been found. In the 30-horsepower model the three-speed selectively operated change gear mechanism is retained without change. Similarly, the four-speed gearsets used in the three larger models have suffered no change from previous practice, third speed being direct drive and fourth speed being an overstep which permits high speed without the necessity of racing the motor at excessive speeds. Control is selective in the larger models, as it is in the small one, an orthodox side hand lever being used in all cases. All clutches are of the cone variety and are provided with cork inserts to ensure smooth action and positive grip.

Center of Gravity Kept Low.

In order to eliminate the possibility of frame weaving, the side members, which are formed of pressed steel, are heavy in section and are substantially braced; the



THIRTY-HORSEPOWER KISSEL INSIDE DRIVEN COUPE

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motors are supported in sub-frames in the main frames, and thus are thoroughly insulated from the effects of such slight frame distortion as may result by reason of unusually rough roads. Power is transmitted to the full-floating rear axle through the intermediary of the orthodox shaft and this, too, is protected from the effects of frame weaving by the incorporation of two universal joints, one between the motor and the gearset and the other between the gearset and the rear axle. By reason of a double drop in the frame, which serves also to lower the center of gravity of the car and thus to increase stability, the drive is in a practically straight line and the loss of power is minimized. The chassis is supported in front on semi-elliptic springs and the rear on three-quarter elliptic members.

Liberal Equipment Supplied.

As was the case with the previous models, the prices of the cars in the present series include full equipment as a matter of course and represent an increase of just $150 each over the prices which have prevailed in the past. The increase, of course, is accounted for by the addition of the electric lighting and engine starting system, which may be omitted if desired, in which case its place will be taken by a Prest-O-Lite tank with the usual complement of gas head lamps.

The remainder of the equipment is the same for each of the models and includes mohair or Pantasote top with slip cover and side curtains, glass front, demountable rims with one extra rim, Stewart & Clark speedometer, double tire irons, Solar lamps, robe and foot rails, and the usual jack, tools and tire repair kit. In five-passenger form, the 30-horsepower model lists at $1,700; the coupe lists at $2,750. The 40-horsepower touring car and coupe list at $2,000 and $3,000, respectively. The 50-horsepower model sells for $2,500, with touring body and $4,000 with both touring and limousine bodies, the prices of limousines including interchangeable touring bodies in every case. The six-cylinder 60-horsepower model sells for $4,650 with both touring and limousine bodies, or for $3,150 without the limousine body. With a closed-front limousine body, as well as the touring body, the price is $4,900.

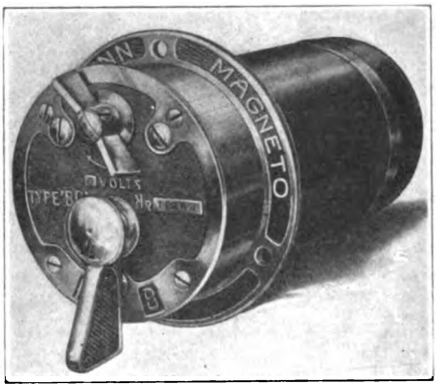
When Drills Are Better Than Braces.

An ordinary brace, though by no means a suitable tool for the purpose, can be used to turn twist drills. Is is far better, however, to use a geared hand drill; a brace cannot be moved fast enough to make a small drill cut properly, and besides, there is every chance in the world for breakage; and in the case of a large drill, it is not possible to apply sufficient pressure to make the cutting edge bite into the metal.

MAGNETO AT LOWER PRICE ADDED TO EISEMANN LINE

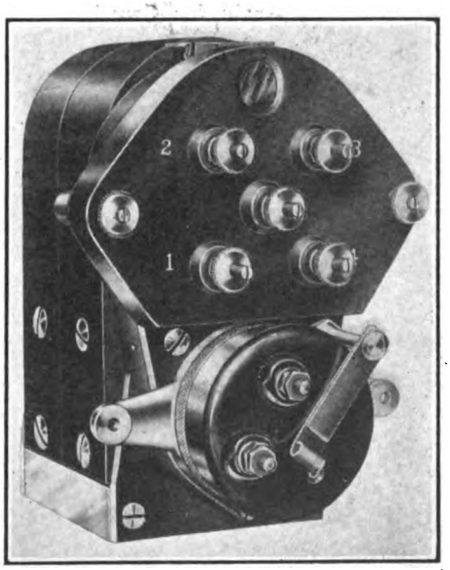
Low Tension Generator with Separate Transformer Coil Mounted on the Dash—Simplicity and Accessibility Paramount Features.

Supplementing an already extensive line of ignition apparatus, prominent among which is its well-known automatic spark control magneto, the Eisemann Magneto Co. of 225 West 57th street, New York



DASH TRANSFORMER COIL

City, has added a brand new type which has been designed to fill the steadily increasing demand for a reliable and efficient magneto at low cost.



EISEMANN'S NEW MAGNETO

The new apparatus is styled Type E.B. high tension system, with separate transformer coil, and as its designation serves to imply, it consists of a compact low-tension generator of familiar magneto form and a separate transformer coil for "stepping up" the low tension current. The coil itself is enclosed in a tight housing attached to a plate screwed to the dash, through which the coil housing extends after the manner employed in other Eisemann systems.

Included in the housing with the coil is the ignition switch which serves to connect either the magneto direct to the transformer coil and thence to the spark plugs, or a set of dry cells to the coil. In order to ensure positive starting "on the spark," the coil housing also encloses a ratchet device, operated by a small handle on the dash plate, for the manual generation of the initial spark. Immediately the engine takes up its cycle of operation, it is sparked from the battery, a kick switch serving to disconnect the battery and connect the magneto direct.

Throughout the system cognizance has been taken of the desirability of maximum simplicity and accessibility, and to this end all extraneous parts have been carefully eliminated from the design. One of the noteworthy features of the apparatus is that the make and break mechanism can be removed entire without the necessity for the use of any tools whatsoever. The new E.B. system, as already mentioned, is an addition to the other Eisemann products, the making and marketing of which just has been materially facilitated by occupancy of a new factory which will permit the output to be increased considerably.

Snaps That Reveal Broken Washers.

Lock washers or "spring" washers not infrequently snap either because they are a little too hard or because of some defect in the metal, when a nut is forced down to a bed. Sometimes the snap is audible, sometimes it can be felt as the wrench moves. and sometimes the break can be discovered only by looking for it. A broken lock washer has some holding power, but not nearly as much as an unbroken one, and therefore should be replaced without unnecessary delay.

Increasing Usefulness of Reamers.

An old shop trick that frequently is useful when it is desired to ream a hole slightly larger than a given sized reamer, is to insert the reamer and with it a strip of sheet metal—tin, iron or brass—about half the diameter of the reamer in width and as long as the cutting part of the tool. This will force the reamer to cut the hole larger than its own diameter by the thickness of the sheet metal strip, though the cutting will be done more slowly than without the strip. The same scheme sometimes is worked with a tap when a very slight increase in thread diameter is required; but it is not a particularly good thing to do except in an emergency, as the effect on the threads is not good.

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DEALER WHO BUILT BUSINESS THROUGH SERVICE

Yonkers Man Who Is Ever Alert to Please Owners of Cars—No Charge for Small Jobs Is Money Gained in the End—Couples Modern Methods with "Don't Get Rich too Quick" Policy.

Selling automobiles as a livelihood brings success to some men and failure to others; operating a garage does likewise. Combining the two would seem a way to assure success, yet the trade furnishes innumerable instances of those who have utterly failed in this line of endeavor. One man, however, who has won out in a striking manner is William Lowa, who, with his son, Charles W. Lowa, conducts business at 197 South Broadway, Yonkers, N. Y., which directly adjoins New York City on the north. The Lowas have made and are making money. They operate a garage that is not losing money and separately, but within a stone's throw of the garage, they maintain a salesroom from which a substantial revenue is derived through the sale of cars.

The Lowas and their methods constitute one of those good examples from which any man who seeks to do so can obtain helpful instruction.

Example of Single Order.

Aggressiveness, a quality which has pulled many sinking firms to solid ground, characterizes the Lowa methods throughout; slipshod processes, instead of having been eliminated, never prevailed. The Lowas handle the Overland, White, Mitchell and Haynes lines, and an instance of their effectiveness is furnished by a single order they are now filling for the city of three fire chiefs' runabouts, a police patrol, an ambulance and a three-ton truck—all Whites. This small fleet when in service will be no insignificant advertisement for the Lowa business.

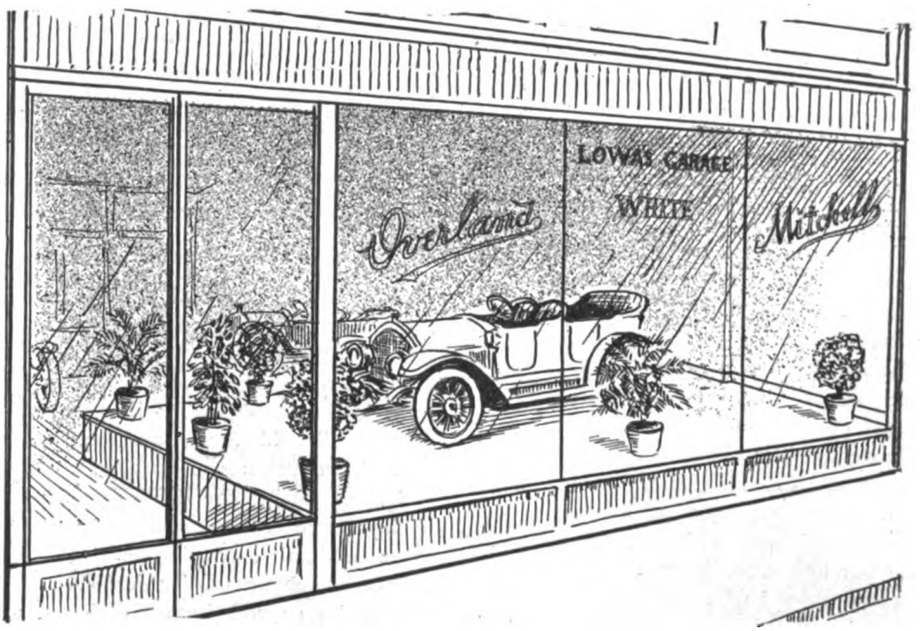
Attractive Salesroom Draws Trade.

That careful planning enters into the sales scheme of the firm is illustrated by the manner in which they have transformed an otherwise mediocre salesroom into an attractive establishment; the front, 35 feet in length, has capacious windows which, however, reach only to within some 15 inches of the floor. A car standing upon the floor would be on the street level and therefore partly lost to view; to render it conspicuous a platform about 15 inches high has been constructed, and on this the display car stands on a level with the bottom of the big panes of glass. While the idea is not new, its effectiveness is ably demonstrated and may "suggest things" to other dealers.

Having brought the car into a position of prominence on the platform, it is made more attractive by the use of palms, ferns and other potted plants. Through the edging of plants, other cars are discernible on the store floor and, once inside, a prospective buyer feels secure from the gaze of passers-by and almost experiences a sense of coziness.

Solving Demonstrator Problem.

Lowa meets the demonstration problem in a unique way. He does not merely sell his demonstrators as used cars at poorhouse prices. When he places a demonstrator in service it actually goes into service, which is to say that, in addition to being used to demonstrate the line, it forms a part of a small fleet of livery cars operated by Lowa, and at the same time that it is depreciating in value it is earning the amount it is depreciating. When it has done service until it no longer is presentable as a demonstrator, it either is kept in the livery service a while longer or is sold at a reduced price and a new demonstrator is secured. In any event, the car has been made to give nearly a full return for its value.



RAISED PLATFORM AS A SALESROOM IMPROVEMENT

On the used car question the Lowas pursue what many regard as the only sensible method. They will not allow for a used car a price that they know they themselves cannot get for it. Once taken, however, they are resold as they stand, either to a local purchaser or to the "scrap heap."

"Scrap heap? What's that?" inquired the Motor World man who was talking with the elder Lowa.

"It's that bunch of 'used car' houses in New York," he replied. "Those houses buy the old cars and ship them out West or somewhere else and sell them. But we generally get our money. We make a price that we know we can get from somebody and sometimes we make a little more; sometimes it is a little less, but never very much."

Regular Mailing System Adopted.

But the selling plan of this dealer-garageman goes further back than salesroom decorations and theories; it finds root in a fundamental principle of true dealership—and that is service and appreciation of the value of good will. The great majority of the firm's sales are directly traceable to the recommendations of satisfied owners. The Lowas have a regular system of selecting men of means who are able to own a

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car and mailing them catalogs and other printed matter. Also, they follow up names received of the factories to which inquiries have been addressed for catalogs. But the service link is the big factor in piling up the Lowa profits.

Free Service That Earns Good Will.

To illustrate: One Sunday not long ago a man driving a new White touring car pulled up at the Lowa garage. He said he was a novice and was sure there was something wrong, because all the way out from New York he had been unable to obtain speed or power from the car. Lowa directed one of the three capable mechanics he employs to ascertain the trouble. The mechanic drove the car, returned to the garage, adjusted the carburetter, having found the air supply was deficient, and inside half an hour the White owner was in good humor. "How much?" he asked. "Nothing," replied Lowa, but the owner insisted on paying a dollar. The garageman flatly refused, and the owner went on his way a much pleased man. This treatment is accorded to all of Lowa's customers, and he is a good Samaritan to every owner of a car of the lines he represents—often to others.

"Get Rich Quick" Wrong Policy.

"The trouble with many dealers and garagemen," said Lowa, "is that they want to get rich too quick. When one does a little job for an owner that costs something like 15 cents, what is the use of charging him 50 cents? Let it go. Some time he will come in with a real job of work, and then he is only too glad to pay your price. If one of our customers says he has trouble we have him bring in his car and we go over it from end to end. If there is any repair work of consequence we charge for it, otherwise we return the car to the owner with our best compliments. It is one way of earning good will. It keeps our owners satisfied and brings us more sales. Often an owner will come to us and inform us of someone who is thinking of buying a car and to whom the owner has recommended one of our cars, and a sale results. It is merely a way in which intangible good will is turned into real money."

Local Papers Used for Publicity.

Other prospective buyers are secured through the firm's advertising in Yonkers papers. Ordinarily two papers are used, on alternate days. The regular space is one-column, six inches, and the cost totals $600 or $700 a year, all on contract. Lately three papers have been utilized. The Lowas are firm believers in advertising, and they employ it in every reasonable way.

And while prosecuting their sales business their garage is not neglected. The Lowas began business several years ago with a garage on Riverdale avenue, which is not the main street, but later acquired the present place, which is on the main thoroughfare of the town and on which the traffic is heavy. During evening and on Sundays there is an unending procession of cars going in both directions to and from the great metropolis which is Yonkers's next door neighbor.

Nearby Restaurant Aids Garage.

Across the street from Lowa's garage is a restaurant which is famed among motorists who drive through Yonkers, and on Sundays and on other afternoons it is not infrequent to see a line of 25 or 30 cars lined up around the triangle on which the restaurant stands. This eating place brings trade to the garage. Motorists who stop there often fill up their gasolene tanks before starting, put in an extra inner tube or renew some of their supplies.

The price of gasolene is 20 cents a gallon, although it is bought for 16 cents. This is a profit of 25 per cent., and in the first eight months of the year the Lowas paid $11,000 for gasolene, thereby netting $2,750. Their bill for tires and tubes between March 1 and September 1, this year, was $35,000, while they bought $2,000 worth of oil, using a good grade only.

Storage Poor Revenue Producer.

Storage is a part of the business, although it is not a big revenue producer. Rates range from $15 and $20 for small runabouts and touring cars to $25 for large touring cars and $30 for limousines. The garage will hold 25 cars, and generally it is full. Three men are employed at night and three during the day to care for this business, and in the daytime, also, there are three mechanics, drawing $4.50 a day, and four or five chauffeurs for the livery service. The entire payroll from March 1 to September 1 was $11,000. Of the Lowa family, the father and son are at the head of the business, one daughter cares for the garage office, another is in the salesroom office, while a nephew of the elder Lowa is the bookkeeper.

Tire Inflation Service Brings Custom.

A drawing card of the garage is its "air service." It is the only place in Yonkers possessing an automatic pump, which is much more to the liking of a motorist than using a hand pump by a dusty roadside. The charge for filling is 10 cents per tire.

The advantage of a location on the main street and the following up of these natural leads to business are productive of results. There now are something like eight garages in Yonkers, which city has a population of about 80,000. Of these about half change hands every few years, which is construed as evidence of lack of profit to the owner. The Lowas, however, have been there seven years. May 1 they rented, in a new building, the salesroom—that in which they installed the raised platform. This is but a few doors from their garage and is conveniently located. Before that time they had been obliged to display their cars as best they could in a part of the garage. Now they expect increased sales because of the change. The first year they were on Broadway they sold 246 new and used cars. Sales now are about 250 cars a year, including the used models taken in trade.

Genialty in meeting the trade also is an asset. Both father and son are agreeable and well liked and conduct their entire business with the idea in mind that it is better to please and stand well with the public than to grab a cent every time a customer is found in possession of it.

Remedying Inaccessible Greasers.

It is worse than useless to provide a hole for oil if it is unprotected and nearly as bad to place oil cups in inaccessible places, or grease cups that from their very position are more often than not covered with caked mud. Whenever a repairman is called upon to loosen a "frozen" brake rod or any similar part that has suffered for want of lubricant, he should not consider his job complete unless he has made provision that the trouble will not recur.

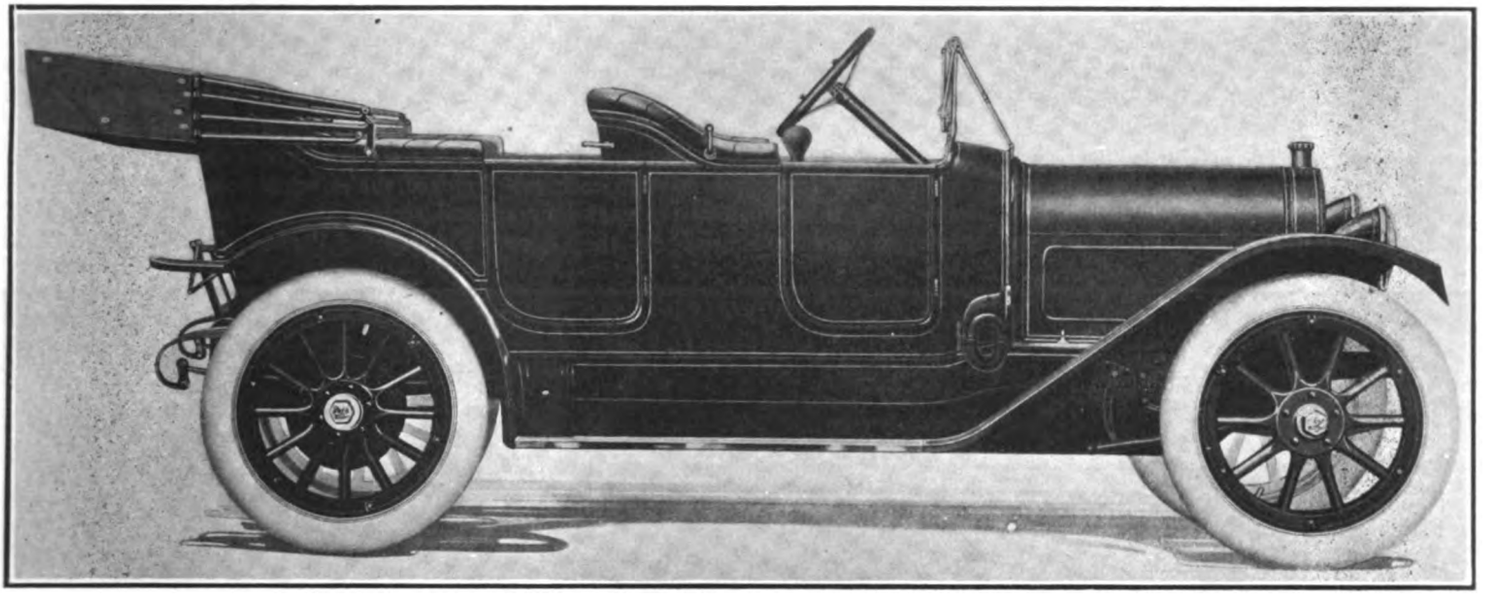
Flexible metal tubing can be had in almost any diameter and grease cups that otherwise are entirely out of reach after the body has been mounted can be so conveniently placed as to ensure attention if a small length of tubing is interposed between the point to be lubricated and the altered position of the cup. First take a short length of brass or copper tube and thread it at one end the same as the grease cup. Insert same in the hole from which the grease cup has been taken, after having sweated the unthreaded end into the flexible tube. Then the grease cup shank can be sweated into the other and, and either the cup or the tube can then be attached by means of a clamp to some convenient point.

Flexible tubing alone is not the only thing than can be used, as ordinary brass or copper tube will in many cases answer the purpose just as well. If these latter are used and any length of pipe over—say, four inches—is found necessary, a stay or support should be provided to prevent them shaking loose or breaking off owing to excessive vibration.

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SMALLER MODEL ADDED TO POPE-HARTFORD LINE

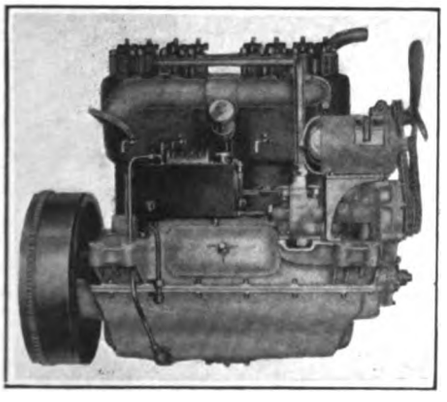
Follows Design of Larger Models, Including Four-Speed Gearset—All Models Electrically Started and Lighted—Roller Gearshaft Bearings and Other Detail Improvements.



NEW FIVE-PASSENGER POPE-HARTFORD MODEL THAT SELLS FOR $2,250 WITH ELECTRIC LIGHTING AND STARTING SYSTEM

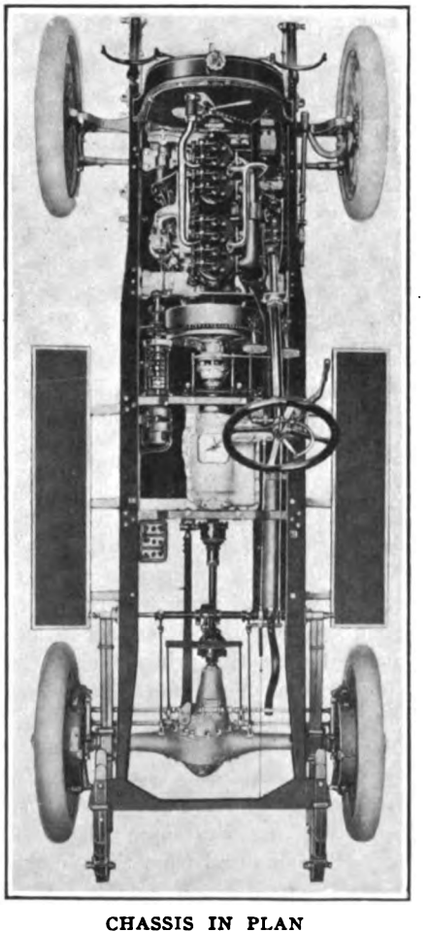
Already well heralded, the medium priced Pope-Hartford car, which has been added to the line of the Pope Mfg. Co., of Hartford, Conn., now formally is being introduced, and proves to be a worthy compeer of the two older models which constitute the Pope-Hartford line.

The new machine is a four-cylinder car



POPE ENGINE SHOWING DYNAMO

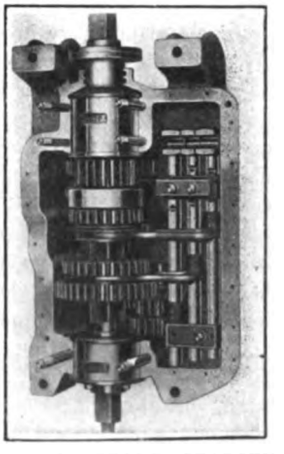
of smaller size, lower horsepower and lower price than either of the others, being rated at 40 horsepower, while the larger machines, a four and a six, are of 50 and 60 horsepower, respectively. Model 31 is the designation of the latest product of this famous concern, and the price is $2,250. The larger four and the six are designated



CHASSIS IN PLAN

as models 33 and 29, respectively, and are priced at $3,250 and $4,250. Either roadster or touring bodies are mounted, in all three cases, without change of price.

The addition of the new model has not been accompanied by the making of ex-



POPE-HARTFORD GEARSET

tensive changes in Pope-Hartford design or construction; on the contrary, the mechanical features that have been so successful in the past have been very closely adhered to, not only in the two larger cars, which are continued almost without change, but also in the new chassis, which is practically a duplicate of the 50-horsepower car in

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everything, except dimensions. Even the "six," which now is in its third year, embodies the same mechanical features as the two fours. All three have valves in the cylinder heads with overhead actuating mechanism, four-speed gearsets, selectively controlled, and shaft drive, and rear axles of the full floating type.

A Replica of Larger Model.

During the general critical looking over that the cars received with a view to bringing them absolutely up to date and to make very sure that the new model was not invested with features that would prove unworthy of its name, little fault was found. As a matter of fact, the only important thing that seemed lacking was a substitute for the crank. While various types of motor starters have been more or less widely used and with more or less success for some little time, the Pope company has maintained an attitude of conservatism—not of the idle sort, however, for extensive experiments have been carried on with a view to the abolishment of human muscle as a starting agent. The result is seen in the equipment of all the latest Pope-Hartfords with Gray & Davis electric starting and lighting systems as standard outfit.

Adopt Electric Starter as Standard.

That here and there details have been slightly changed with a view to rendering more effective features that already have proved worthy of incorporation in Pope-Hartfords goes without saying. Such a change is found in the substitution of large roller bearings for plain bearings for the support of the shafts in the gearbox, and in the narrowing of the front of the improved double-drop frame, in order to facilitate turning short, as well as other things of comparatively little importance individually, but of considerable importance in the aggregate.

As already indicated, all three cars are much alike in general principles, and one general description fits all three. The motors, which are of the long stroke type, are built with pair-cast cylinders with integral water-jackets, and overhead gear operating valves in the cylinder heads through long push-rods and rockers; the valves are of chrome-nickel steel. All the valves are on one side, and a single camshaft carries all the cams, which are integrally formed with the shaft. Particular attention has been given to the cutting of the timing gears, which run with extreme quietness. A mechanical oiler forces lubricant to each cylinder. Gas is supplied to the engine by a carburetter manufactured at the Pope works; it has but a single adjustment. Ignition is by Bosch dual system, with high-tension magneto for ordinary running and a storage battery as a source of current for starting and for emergency service.

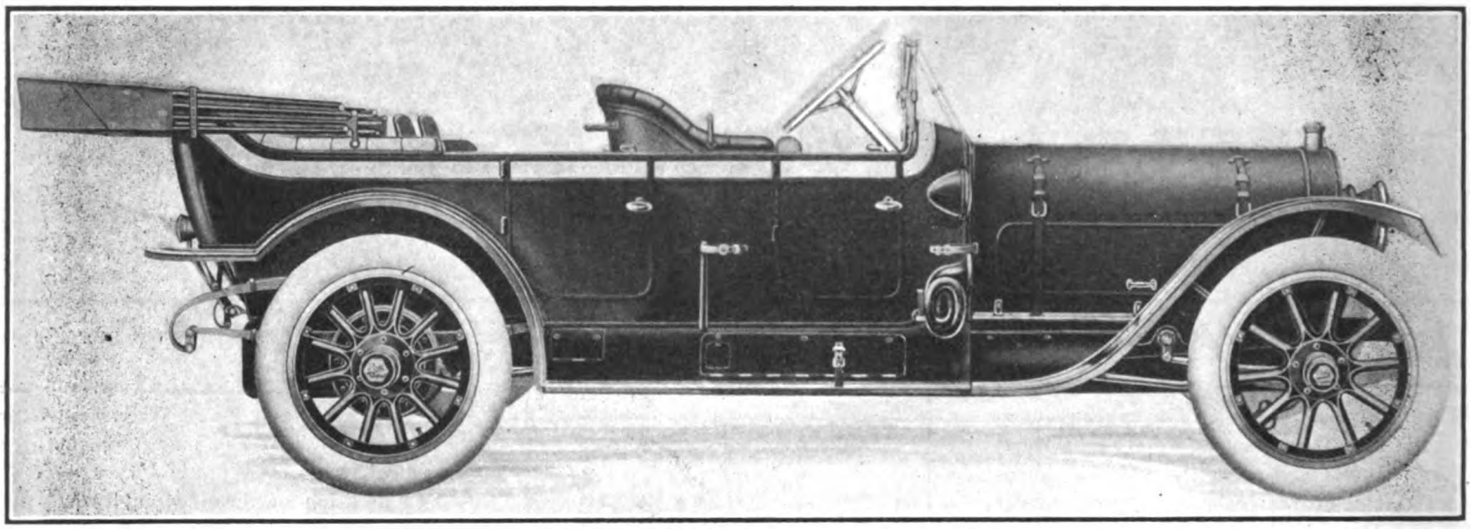
Modification in Gearset and Frame.

The leather-faced cone clutch, which is of liberal diameter, is equipped with cork inserts, and it is connected with the primary shaft of the transmission by a coupling of special design, with large wearing surfaces. An efficient clutch brake aids very greatly in the changing of gears by preventing the rattling and grating that ensues if the shift is made before the primary shaft, which the momentum of the clutch tends to keep turning, has slowed down.

Direct drive is on the fourth speed of the gearset. All gears and the gear-shafts are of chrome-nickel steel and run in a bath of oil. The propeller shaft through which power is transmitted from the tail-shaft of the gearset to the rear axle is fitted with two universal joints. The rear axle is of the full-floating type; roller bearings carry the pinion shaft.

Frame Reinforced by Ash Inserts.

Re-enforcements of tough ash are added to the heat-treated chrome nickel steel channel members of the main frames, which are double dropped and narrowed considerably at the front to provide room for the front wheels in making short turns; the various frame members are thoroughly braced and hot-riveted together. Three-quarter elliptic springs support the rear of the chassis, while the front end is carried on semi-elliptics, all long and flexible. Positively irreversible steering gear is employed, the principle being that of the worm and sector; the mechanism is enclosed in a dust-proof casing. The wheel, no less than 19 inches in diameter, has a rim of mahogany and is mounted on a column 1¼ inches in diameter. Spark and throttle levers are mounted on top of the wheel, working on a single sector. The usual pedal accelerator is fitted. All control levers are inside the body, on the right side.



SIDE VIEW OF STANDARD SIX-CYLINDER SEVEN-PASSENGER POPE-HARTFORD TOURING CAR

Large Tires and Metal Bodies.

Both of the four-cylinder models are equipped with 36-inch wheels with 4½-inch tires all round, while the six has 37-inch wheels and 5-inch tires. The wheelbase of the new car is 118 inches; of the other four 124 inches—the same as its predecessor—while the wheelbase of the six has been shortened by an inch, now being 133 inches. In all cases the tread is 56 inches.

The bodies in all models are of metal construction, with moderately deep skuttles and mahogany dashboards. Running-boards and mudguards are of ample width and fitted with suitable wings to keep down flying mud when the roads are in bad condition.

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LIFTING THE FOG FROM THE LIGHTING SYSTEM

Wherein Different Apparatus Differs with Particular Reference to Current and Voltage Regulating Devices—Necessity for System in Searching for Trouble—The Dealer in the Light of a Doctor.

(This is the sixth of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render easier their care and repair by dealer and owner alike.)

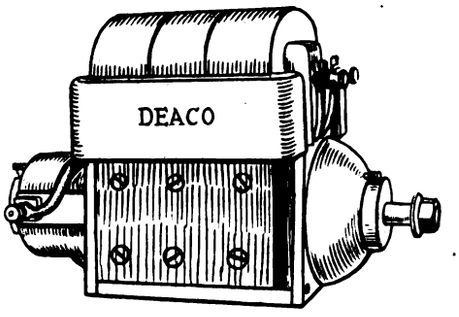
In the curriculum of every school of medicine there is a class devoted to dissection. It is an analytical class in which the structures of inanimate, and sometimes animate, creatures are taken apart and torn down in order that their characteristics and their functioning may be examined and learned by a body of young medicos whose future work will be the curing of human ailments. But before they can cure such ailments, it is absolutely essential that they learn thoroughly the construction and work of every organ, for in the learning comes knowledge of those organs that, under normal or abnormal conditions, are most likely to cause that condition of physical ill-being that results in the necessity for their healing administrations. In other words, they learn through constant association and intimate contact with ligaments and tissues, "liver and lights," the parts which seldom give trouble and normally should be let severely alone, and the parts which are most prolific of derangements.

Analytical Learning Is Helpful.

To make a long jump from one subject to another, though the linkage should be quite apparent, knowledge of the modern electric lighting system rightfully should be gained in much the same manner. The student of the system, or the owner, or the dealer—and the dealer in particular, for in the majority of cases he is looked upon as being the real "doctor" when minor or major troubles evidence themselves—ought to learn of the system through methods much akin to those which obtain in the case of the embryo M. D. He ought to be taught, first of all, its theory and afterward its practice; then, with a course of dissection and consequent reconstruction, he ought to be fairly well equipped to cope with very nearly any trouble that might arise.

Dynamos and Hearts Contrasted.

Fortunately, however, such thorough courses in training are unnecessary, though they nevertheless are desirable and will do a great deal more good than harm. The builder of the modern electric lighting system has builded his product well; unlike the human frame, it is not subject to unaccountable ailments; it has no digestive organs, no intestines, no lungs, and is endowed with endurance that is remarkable. But it has a heart. In electrical engineer's parlance it is styled a dynamo. The heart of the electric lighting system is like the human heart in at least one respect: If it is not abused, it will continue to perform its alloted work until it wears out. To obviate the possibility of inadvertent abuse, a knowledge of the construction and working of the "heart" is necessary. In the last five issues of the Motor World there have been outlined many methods whereby thoughtless abuse of a number of electric lighting systems can be obviated and such troubles as may arise by reason of wear may be remedied. In the present article, a number of other systems are similarly treated—for the edification and education of the dealer and the owner—and the series will be continued until all of them have been covered.



DEACO GENERATOR IN PERSPECTIVE

Compactness Means Simplicity.

If there is any one thing which tends to prove more than another the real simplicity of very nearly all electric lighting systems, it is their compactness. While it is perfectly true that a watch is a more than ordinarily compact pieec of mechanism, that is very far from being simple, its complexity is due to its great number of very small and intricate pieces. With the lighting generator, on the other hand, the parts are few—in many of them there is but a single moving part—and they are fairly large and of rugged construction. The only parts that might, perhaps, be styled complex are the field and armature windings, but the complexity of these parts need never concern the dealer or the user, for the simple reason that they are so constructed that they never require attention except under most extraordinary conditions. Otherwise they can be forgotten completely. The rest of the machine is simple, or becomes simple after superficial examination. The great difficulty is to get dealers and owners to make the examination, however, despite the fact that it manifestly is to their own advantage more than to any one else's to do so. Even in the few cases where the functions of an electric lighting generator are combined in a single instrument with those of a high tension magneto, construction—and operation—still remains simple, vide the accompanying cross-sectional view of the Deaco combined generator and magneto.

Combined Magneto and Dynamo.

The Detroit Electric Appliance Co., of Detroit, Mich., is among the very few manufacturers that attempt the production of a combined instrument of this type. The magneto portion of the generator is orthodox and differs but little from generally accepted magneto design, though the low tension generating part of the machine is quite different from anything else of its kind, particularly in the method of current regulation. Two styles of instruments are manufactured, the one being the combination magneto-generator shown in cross-section and the other being a plain lighting generator which is exactly similar to the first, except that the ignition apparatus is left off. Consequently, the cross-sectional view of the former will serve to assist in describing the operation and care and repair of the latter.

Operation of Compound Field.

The field of the lighting generator is a compound one formed in part by three pairs of permanent magnets supplemented by windings which serve to increase the current strength at low speeds and also to permit of current regulation in a manner that leaves little to be desired. The armature is of the drum wound type, wound with cotton covered enamel wire and afterward impregnated with an insulating compound and baked; it therefore is practically inde-

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structible and never requires attention. Similarly, the field winding is practically solid and is encased in a tight housing which precludes the possibility of it being damaged. The current regulator is an electro-magnetic device, and this also is thoroughly protected. It is enclosed in a housing mounted within the arch of the permanent magnets. The whole device consists of a pair of electro-magnets, connected in series with the line, operating a pair of spring-returned armatures mounting the contacts necessary to obtain the various degrees of current strength.

How the Regulator Regulates.

In operation, as soon as the engine is started and the armature commences to rotate, current is generated. The field of the dynamo then consists of the permanent magnets assisted by the field winding which operates to increase the field strength and therefore to increase the current output at low speeds. As the speed of the armature is increased, one of the electro-magnet armatures is attracted to its core and thus alters the connections so that the field winding is cut out entirely, leaving the field composed of the permanent magnets alone. As the armature speed is further increased connections automatically are made which permit a small part of the current generated to flow through the field windings in the reverse direction, thus weakening the field and maintaining the current constant. At still higher speeds, the full strength of the current is passed through the field windings in the reverse direction, still further reducing the strength of the field and permitting the generation of only a predetermined amount of current. The exact amount generated may be adjusted to a nicety by increasing or decreasing the strength of the springs which return the electro-magnet armatures to their normal position. The arrangement of the parts is shown by the accompanying cross-sectional drawing.

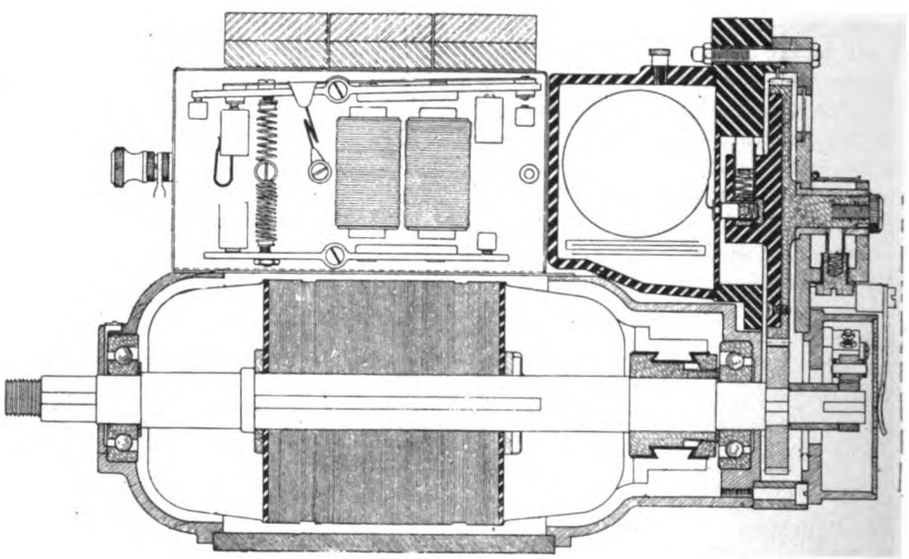
Care That Is Needed in Use.

In caring for the mechanism, it will be necessary, of course, in order to ensure its automatic operation to make sure that the electro-magnetic regulator is performing its functions. The contacts should be examined from time to time, and if they show signs of burning or pitting, or if they are dirty, they should be cleaned with the aid of a couple of strips of very fine emery cloth glued to the opposite sides of a piece of very thin Bristol board. Care should be taken, however, not to remove too much metal or the adjustment will be altered. Provision for taking up for wear is made, and the only tools required are a couple of screwdrivers. Needless to add, the interior of the regulator housing should be cleaned out and all accumulations of dust and dirt removed carefully with the aid of a fine camel's hair brush. About once in six months it will do no harm to place a tiny drop of typewriter oil on the bearings that support the moving parts. Under no consideration should oil be placed on the contacts, and care should be taken to see that not enough oil is employed on the bearings to allow any to get on the contacts. Oil is a non-conductor of electricity, and its presence on contacts spells trouble with a capital T.

Inasmuch as the armature shaft runs in ball bearings of liberal size and friction is reduced to the minimum, lubrication should also be reduced to the minimum, which means a few drops of typewriter oil or fine machine oil about every couple of thousand miles. Typewriter oil is recommended in this connection for the reason that typewriter manufacturers have been at great pains to develop a lubricant which will serve its purpose without causing excessive accumulations of dirt and without "gumming." Fatty oils derived from animal matter are inclined to "gum" up the bearings and also are likely to contain acids which will cause corrosion of the bearings. For this reason only the very best oil should be used, and it should be used only in limited quantities to obviate danger of its reaching the commutator, in which case poor commutation will result and the output of the generator be reduced.

Need for Proper Commutation.

Due to the rugged construction of the commutator and the brushes, little trouble is likely to develop, provided these parts are properly cared for. The brushes should be examined from time to time and cleaned with a cloth moistened with gasolene to remove oil and grease which may have accumulated. Care should be taken to see that the brushes press firmly on the commutator, and when they have become worn so that the tension of the spring is less than it should be they should be replaced with new ones. The cost of such replacement is but a few cents and often may be the saving of the commutator, for it is a well-known fact that brushes which touch the commutator too lightly to effect proper commutation but not lightly enough to prevent the machine generating are the most prolific causes of commutator trouble. Sparking burns the brushes and the commutator, and generally can be traced to insufficient tension on the brush springs, a dirty commutator or dirty brushes. If the commutator shows signs of scratching the brushes first should be examined to make sure that no hard particles of carbon are present. If the brushes are smooth, very fine sandpaper—about No. 00—may be pressed lightly on the commutator while the machine is running. Emery cloth never should be used for this purpose, for minute grains of emery are likely to imbed themselves in the comparatively soft copper and play havoc with the brushes.



DEACO MAGNETO-DYNAMO IN SECTION, SHOWING REGULATING DEVICE

Magnetic Cut-Out Characteristics.

The automatic cut-out in the Deaco system is an electro-magnetic device consisting of two windings and a spring-returned armature. The armature carries one of the contacts with which connection between the dynamo and the battery is established or broken. The other contact is stationary. In operation, the cut-out makes connection between between the dynamo and the battery when the current generated by the former exceeds that of the latter. Immediately the current of the battery exceeds the generated current, as when the engine is stopped or when the armature speed is

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not sufficient to cause the generation of sufficient current, connection automatically is broken. There is nothing in the device to get out of order and, provided care is taken to see that the contacts are kept clean and the armature bearing does not become stuck, preventing the operation of the device, it should never give trouble. Approximately once in six months a single drop of typewriter oil on the bearing of the movable arm will be sufficient lubrication.

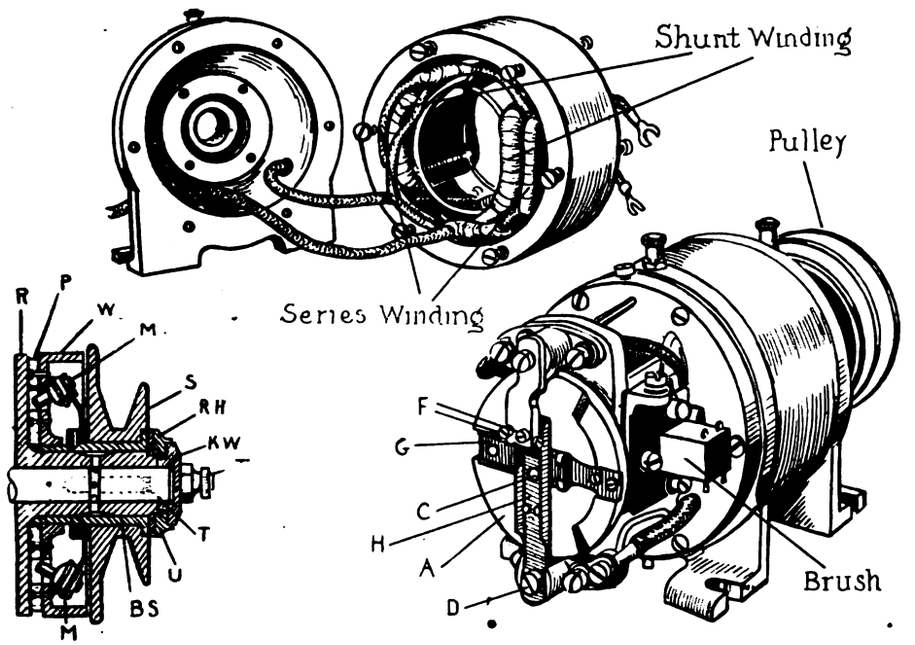
Where Wires May Be Shifted.

One of the noteworthy and characteristic features of the Dynalux system, manufactured by Dean Electric Co., of Elyria, O., is that the dynamo may be connected to the battery without regard to the polarity of either. Thus, it is not necessary to connect the positive wire from the dynamo to the positive terminal of the battery, and vice versa; either wire may be connected to either terminal without discrimination. As a result, the likelihood of confusion is eliminated, as is the danger of damage resulting to the battery by reason of incorrect connections being made through ignorance or mistake.

Differential Regulation Obtained.

The component parts of the Dynalux dynado are shown herewith in partly disassembled form in order the better to make plain their features. The field is compound wound, the series winding being outside the shunt winding in order to obtain a differential effect in regulation. The whole mechanism, including the driving pulley and the automatic cut-out, is completely enclosed by means of a light removable cover, and though it thus is thoroughly protected and is very nearly dust and dirt proof, it is impossible effectually to close all interstices, and it is the better part of wisdom occasionally to remove the cover and carefully clean out all accumulations of dirt and carbon dust from between the windings with the aid of a soft brush. The brushes, of course, will wear in time, and unless the carbon dust from them is removed periodically it is likely to accumulate in such quantity in time as to hinder the proper operation of the machine.

In addition to the electrical self-regulating feature, which is entirely automatic and is dependent upon no outside agency whatever, another regulating device is incorporated in the driving pulley, which is so arranged as to permit practically constant speed driving without continual slippage of the parts and the attendant wear which takes place under such conditions. The pulley, illustrated in section herewith, is made in two pieces (R and S). The grooved pulley (S), or driving sprocket where chain drive is employed, is mounted in a bronze bushing (BS) which runs freely on the portion of the drive shaft keyed to the armature. The driving pulley imparts motion to the armature shaft through the intermediary of a star-shaped spring having four arms (MM and NN), which bear heavily against a loose friction disc (W), the latter making contact through a friction material (P) with the pulley (R) which is keyed to the armature shaft.



DYNALUX GENERATOR DISASSEMBLED, SHOWING CLUTCH AND CUT-OUT

Care of the Driving Pulley.

For low and medium speeds, the drive is positive and without slipping from the pulley to the armtaure shaft, but above a predetermined speed the weights (MM) at the ends of two of the arms of the star-shaped spring tend to straighten out under centrifugal force and thus relieve the pressure between the pulley and the driving disc. This allows a certain amount of slippage to take place, and at higher speeds the other weights (NN), which are lighter, also straighten out and release the pulley entirely. Of course, as the speed is decreased the operation is reversed and the drive is taken up gradually and without shock.

As there are no moving parts in the declutching apparatus—no joints or hinges, etc—it should require very little attention; occasional inspection to make sure that the device is operating properly, however, is a wise precaution. Should it be found necessary to increase the charging rate of the dynamo, or to obtain positive drive up to greater speeds, this can be accomplished in a simple manner by adjusting the releasing mechanism of the pulley. For adjustment, it is necessary first to remove the combined cap screw and oiler (T) at the end of the shaft. This will permit the key washer (KW) to be removed, exposing a castellated nut (U), which should be screwed up one or two notches, as the case may be, to increase the tension on the governor springs and permit the drive to remain positive at higher speeds. As the device is set at the factory, the driving ratio which obtains is approximately 3 to 1 over the whole range of engine speeds. The only lubrication which is required in the declutching mechanism may be applied through the combined cap screw and oiler (T) at the end of the shaft, a few drops of fine oil about once a week, according to the amount of use the device is given, generally being sufficient.

Centrifugal Circuit Breaker

The circuit breaking device in the Dynalux generator is mounted at the commutator end of the shaft and is completely covered by the outer casing of the machine. The removal of the casing renders the brushes, the commutator and the cut-out instantly accessible. The cut-out operates on the centrifugal principle, its weights having been proportioned to close the circuit between the dynamo and the battery when the voltage of the two is approximately the same. As a result, sparking and arcing at the contacts is practically eliminated.

The construction of the device is simple, a weight (G) being mounted at the end of a spring member (B), which rotates with the armature shaft. When a predetermined armature speed is reached, the weight tends to assume a position in line with the fastening at the other end of the spring, and in doing so it moves a second spring (H) through a hardened steel button (C) bring-

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ing contacts on the second spring against two fixed contacts (FF), which are stationary; the hardened steel button (C) acts as a bearing.

Cut-Out Adjustments Easy.

Although the cut-out has been found by experience to operate effectively for long periods without inspection or adjustment, it should be examined from time to time, for upon its proper operation much depends. Adjustment of the contacts should not be attempted, except after long service, for they are set at the factory to close the line at the proper time and will not require to be touched for at least a season. Occasionally, however, the contacts may be cleaned with the aid of two pieces of very fine emery cloth glued to opposite sides of a piece of thin Bristol board. If adjustment appears necessary, it may be made by setting up the screws (FF) which mount the contacts. Care should be taken to see that proper contact is made when the armature shaft speed is increased and that the circuit is broken when the engine is stopped. In no case should the contacts be set closer than will permit a thin business card to be passed between them.

Where Lubrication Is Needed.

Owing to the fact that the armature is carried in ball bearings, very little lubrication will be required, a few drops of fine machine oil placed in the oilers about once every 1,000 miles being sufficient. The only other part which should be oiled frequently, say about once a week, if the car is driven a great deal, is the free portion of the declutching pulley, which is fed through the combined cap screw and oiler (T) at the end of the armature shaft.

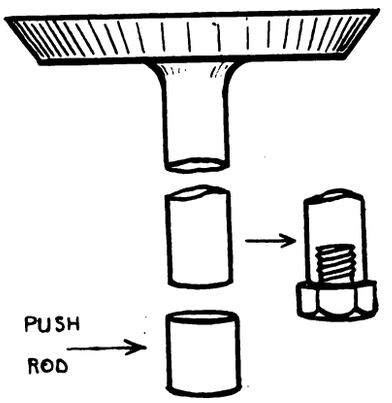
Instructions for the care of commutator and brushes such as have been given in previous articles apply also in this case and consist, briefly, in maintaining a brownish glaze on the commutator through infrequent and minute applications of fine vaseline applied with a small piece of felt while the instrument is running. Accumulations of foreign matter which cause poor commutation may be removed by very light applications of No. 00 sandpaper. The brushes should be examined from time to time to make certain that they touch the commutator properly. After continued service, they will require to be replaced, though the operation is neither difficult nor does it entail great expense.

The Location of Troubles.

Failure to generate in the Dynalux system, as in very nearly all other systems, generally can be traced to broken wires, short circuits or poor commutation, the remedies for each of these troubles being made plain by the trouble itself. Systematic search for the cause of trouble is the only satisfactory means to employ, and as quickly as one part has been examined and found correct that part should be put into its original condition before the next is attacked. Only in this way can confusion be obviated and ultimate satisfaction be obtained.

Lengthening Short Valve Stems.

If the repairman had to repair new cars only, he would have a comparatively easy time, but the time when he must show his skill and ingenuity is when an "old crock" is overhauled. One of the unmistakable signs of old age can be found in their teeth, so to speak—that is, the valve push-rods. A worn push-rod without any means of adjustment prevents proper digestion of the carburetted gases, as the valves open late and close early. One of the most general methods of taking up the play between the valve and the push-rod is to interpose a cap or thimble over the latter, when the tension of the valve spring is sufficient to hold it in position.



METHOD OF LENGTHENING STEMS

Sometimes this method is not possible, especially if the push-rod head is flush with the guide. In such cases there are two alternatives — either fit new valves with longer stems or lengthen the stems of either the push-rod or the valve. Reference to the accompanying sketch will make clear the method of performing such a job. First drill and tap the stem for a standard machine screw and screw same in position. The two parts should then be brazed together and thoroughly cleaned of any brass and the sides of the hexagon head rounded off. If it is desired to harden the new ends of the valves this easily can be done with a little cyanide of potassium, in the usual way.

England Straining for "Home-made" Fuel.

Having become properly incensed at the laxity of British inventors and chemists in failing to concoct or otherwise produce some form of "home-made" fuel that will make Great Britain independent of the necessity of importing "petrol," which necessity, it is pointed out, lays the nation open to the possibility of dire catastrophe in the event that the seaports should be blockaded by a hostile fleet, the Royal Automobile Club at length has set on foot a movement calculated to assist in the production of a "petrol" alternative other than kerosene or paraffin or a derivative of petroleum. Incidentally, one of the British automobile journals has lent its support to the movement by offering a prize of $500 for the best performance under R. A. C. supervision, of a car on a "home-produced fuel suitable for internal combustion engines (other than a product of petroleum), whether liquid, solid or gaseous, provided, of course, that such fuel is something reasonably practicable and that it is possible to become a marketable product within a reasonable time."

Philadelphia Club Establishes Garage.

To accomomdate its members, the Automobile Club of Philadelphia has established a garage on 23d street, below Market street, where there has been made provision for the handling of cars in an up-to-date manner; the building, when fully completed, will be of three stories and will afford a capacity for 350 cars. At present the first floor only is in use. Separate quarters are provided for white and colored chauffeurs. The garage management is vested in Powell Evans, chairman, Robert P. Hooper, Winfred J. Foss, S. Boyer Davis and W O. Griffiths.

To Save "Cops" from Cold Feet.

Indianapolis, which scarcely requires the abbreviation "Ind." behind it to make its identity known, is nothing if not progressive. The city has taken pity on its much abused traffic policemen and hereafter some of them, at least, will go to their homes dry shod and with feet less like the proverbial lump of ice. So that 12 traffic regulators, stationed at as many downtown intersecting streets, may not get cold feet in the literal sense of the words, the city has appropriated $700 for the purpose of installing small steam-heated platforms, upon which the policemen may stand during the hours of their vigils when the thermometer registers something less than 100 in the shade.

Holding Round Shaft In Vise.

A round shaft having a machined surface can be held solidly in a vise if a piece of emery paper is wrapped around the shaft before being held in position; at the same time prevent the shaft from damage.

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In the RETAIL WORLD

W. L. McQuerry has opened a garage in De Soto, Ia.

W. P. Harman is about to open a garage in Mena, Ark.

John C. Stolt plans to establish a garage in Nicollet, Minn.

Claude Andrews is building a garage in Union City, Tenn.

Peddycort & Lahr have opened a garage in Cheyenne, Wyo.

Ransom J. Pearce has opened a garage in Houghton, Mich.

Ben Spahnoli of Richmond, Cal., has let the contract for a garage.

Ralph Hopkins is about to build a garage, 51 x 60 feet, in Colfax, Ia.

Frank Schleeter plans to build a garage, 80 x 150 feet, in Galva, Ia.

W. E. Baumer of Big Arm, Mont., is about to open a repair shop.

Peter Garnier is to built a garage in Palms, Cal. It will cost $6,650.

J. K. McLain is preparing to build a garage in Excelsior Springs, Mo.

The Jones Cycle and Automobile Co., of Portland, Ind., has been dissolved.

The Star Auto Co., of Pella, Ia., plans to build a new garage and salesrooms.

Frank L. Seaker and Elmer Curtis have opened a garage in Gouverneur, N. Y.

The Weiler Auto Co. has opened up in Bay City, Mich., at 905 Saginaw street.

Otto Bauman intends to erect a brick garage, 50 x 100 feet, in Lake Wilson, Minn.

Aldege Chaussee has taken over the Geo. A. Schott garage in New Bedford, Mass.

O. E. Olson has purchased the garage and repair shop of John Odegard in Pekin, N. D.

Fred and Walter Taylor plan to start an automobile livery in Junction City, Kan.

G. R. Spencer of Odebolt, Ia., has commenced the construction of a garage, 40 x 80 feet.

J. W. Mooman has sold his interest in the Urbana (Ill.) Auto Co. to his partner, John F. Miller.

Timothy Lynch of Glens Falls, N. Y., is fitting up a garage in Warrensburg, in the same state.

Herman Herr has sold his interest in the Abilene (Kan.) Garage to L. S. Turner of Kansas City.

H. A. Saunders of Bryan, Tex., has sold the Imperial Garage to O. S. Johnson and Henry Ronde.

The Creamer & Davidson Co., of Rochester, Ind., is about to build a garage; it will cost $10,000.

Lon Gephart has opened a repair shop in New Castle, Ind. It is located at 131 North 11th street.

M. H. Taylor has opened up in Elmira, N. Y., at Gray and State streets; the style is Taylor's Garage.

W. H. Davis of Houston, Tex., is about to open a garage; several Cuero men are associated with him.

The Frank Tuschen Garage in Watertown, Wis., has been taken over by Felix and August Knospe.

The Jackson Motor Car Co., of Boston, Mass., has established a service station on Haywood street, Cambridge; J. L. Judd is manager.

The Detroit (Mich.) Hupmobile Sales Co., now at 730 Woodward avenue, is about to remove to newer and more up-to-date quarters at Willis and Woodward avenues.

L. M. Barr, who has been a publishers' representative in Detroit, and F. C. MacLeod have formed a Ford agency in Lima, O. The style of the concern is McLeod-Barr Sales Co.

The Transcontinental Motor Co., of Phoenix, Ariz., has taken over the Arizona Motor Co. F. A. Carr, the Arizona manager, remains with the new organization; the company has taken the Krit agency.

Howard D. Graves, formerly a salesman in Hartford, Conn., for Brown, Thomson & Co., has entered the trade for himself; he has the Henderson agency in that city. Temporarily he will be located at 19 May street, but later will occupy a building on Allyn street.

The Turnbull Automobile Co., of Willimantic, Conn., has purchased for garage purposes the Beckwith factory on Chestnut street, Norwich, in the same State; accommodations will be provided for 150 cars. F. J. Wood, of Willimantic, will have charge of the repair work.

Under the style A. D. Bothne Co., a new company has entered the selling field in Des Moines, Ia. A location has been secured in the Capital City Commercial College building at 10th and Walnut streets; Great Western cars will be stocked. A. D. Bothne is head of the business.

W. R. Dean, who recently went to Spokane, Wash., from the East, has arranged to handle the Stevens-Duryea line in that city; December 1st, he will take possession of the building at First avenue and Maple street, now occupied by the Pacific Motor Car Co. Plans of the latter concern are indefinite.

The Van Vliet-Bradt Co. has been organized in Des Moines, Ia., with several prominent business and automobile men as backers, and will deal in Moon cars at 918 West Locust street; the capitalization is $10,000. The officers are: President, W. E. Moyer; vice-president, W. J. Bradt; secretary and treasurer, C. G. Van Vliet.

Hunter-Hammond Auto Co. is the style of a new business in Indianapolis, Ind. It will have the Reo agency for the State of Indiana. The company is composed of F. Ellis Hunter, formerly with the Gibson Auto Co., and Harry L. Hammond, formerly sales manager for the Archey-Atkins Co. Pending the vacation of salesrooms at 517 North Capitol avenue, the business is located at Capitol avenue and Michigan street.

J. K. Gewinner, as president and general manager, and Marshall C. Johnson, as secretary and treasurer, have combined their names in the Johnson-Gewinner Co., which just has opened for business in Atlanta, Ga., at 124 Peachtree street and 83-85 North Forsyth street. They will deal in accessories and supplies, the completeness of their lines being indicated by the fact that an automobile millinery and clothing department will be maintained. Also, it includes a Bosch magneto agency.

The Wallace Automobile Co., 332 North Broad street, is a new entry in the selling field in Philadelphia, Pa. It has taken the agency for Pope-Hartford cars and Modern delivery trucks. The officers are: President, William M. Brownback; vice-president, H. B. Pearson; secretary and treasurer, Robert Wallace; the latter will conduct a garage and service department at 206-10 North 21st street. Robert M. McCormick, formerly a Regal salesman, is connected with the selling end of the new business.

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HAMLIN WINNER OF RACE ACROSS ARIZONA DESERT

Covers the 511 Miles from Los Angeles to Phoenix in Eighteen Hours—Campbell Leads San Diego-Phoenix Chase.

Desert sands and mountain heights never were conducive to the production of speed, but when all is said and done, when the difficulties and the length of the route, and the fact that much of the travelling was done in the hours of darkness are considered, the speed of Ralph C. Hamlin, who drove a Franklin car over the 511-mile Los Angeles-Phoenix course at an average rate of 27.8 miles an hour, certainly is "going some" and entitles him to the honors which he won. The next best time made in the fifth annual desert road race, which started in Los Angeles on Saturday evening last, 26th inst., and finished in Phoenix (Ariz.) on the afternoon of the Monday following, was that of Charles Soules, who piloted a Cadillac and finished 45 minutes later than Hamlin. His elapsed time was just 18 hours.

The race, as has been the case in previous years, was run under the auspices of the Maricopa Automobile Club. The contest was run in two stages, the first to Yuma, where the contenders arrived on Sunday morning, and the second from Yuma, which the contenders left early Monday morning, to Phoenix. Twelve lined up for the start on Saturday evening—S. A. McKee (Cadillac), W. F. Pipher (American), Charles Soules (Cadillac), W. T. Brunell (American), A. G. Faulkner (Simplex), Leonard Jones (Hupmobile), Wm. Bramlette (Cadillac), Louis Nikrent (Buick), Ralph Hamlin (Franklin), Fred Fuller (National), Charles Bigelow (Mercedes), and C. M. Floersheim (Schacht). William Carlson (Winton), who was entered, did not start.

McKee, in the Cadillac, led off and the others followed at five-minute intervals. Soules was the first to arrive at Yuma, but the best time was made by Hamlin, who covered the distance of 304 miles in 10:47 against 11:02 made by the Cadillac driver. Faulkner in the Simplex was third, his time being 11:37. Louis Nikrent went into the ditch at Bloomington and wrecked the Buick, which naturally put him out of the running. Brunnell, in one of the Americans, smashed a wheel, just outside of Los Angeles, which delayed him for several hours.

At Yuma, the contenders met 22 drivers who were competing in the San Diego to Phoenix road race, which was promoted by the San Diego Automobile Dealers' Association, after it had been definitely decided that the Los Angeles affair would not pass through San Diego, as has been the case with the four previous contests. The San Diego faction, which had left the starting point at the same time as the Los Angeles racers, arrived at Yuma earlier, as was natural, since the distance traveled is not so great. A battle royal ensued between the two factions for the remainder of the long race.

Of the Los Angeles drivers, Hamlin made the best showing, and checked into Phoenix Monday afternoon, after having covered the distance in 18 hours and 45 minutes. As was before stated, Soules took second place, while third position went to Fred Fuller in a National, who finished in 20 hours and 10 minutes. Their performances net both the leaders trophies, and a goodly share in the $6,000 prize money, the remainder of which goes to Fuller.

The race from San Diego was won by D. C. Campbell in a Stevens-Duryea. Second place went to W. E. Ferguson in an Apperson, and third to R. L. Greer, who drove a Mitchell. A similar cash prize was divided between the first three men.

Grant Stars at Rockingham Park.

By capturing two of the five numbers of the twice-postponed racemeet of the Salem (N. H.) Motor Club, Harry Grant (Stutz) played the star part when the program finally was carried out on Tuesday last, October 29th. Grant won the one-mile time trials, covering the distance and setting a ned local track record at 57⅗ seconds. He also won a three-cornered match race which went for 25 miles, completing the distance in 21:03⅕ and leading home LeCain (Stutz) and Basle (Jackson). The other honors were shared by Harry Cobe (Jackson), who completed a ten-mile free-for-all in 10:54⅘, Jack Le Cain (Stutz), who accounted for a 25-mile free-for-all in 26:13, and George W. Downes (National), who made the best showing in the one-mile time trials for amateur drivers by completing the circuit in 1:05.

Two Dealers Suspended by A. A. A.

For violation of that rule of the A. A. A. contest board which prohibits advertising as the performances of stock cars the showing made by cars entered in non-stock car contests, the Pittsburgh Mercer Auto Co. has been suspended until January 1st, 1913. The George C. Brinkman Motor Car Co., which handles Nyberg cars in St. Louis, also has been suspended for a like period for failure to have a Nyberg which they had entered in the Universal Exhibition Co.'s races, September 29th and 30th, at the track to compete.

WET TRACK MAKES SLOW SPORT AT HARTFORD MEET

Grennon Takes Three of Six Events and Ties With Kyle in a Fourth—Menenghetti a Lesser Light.

Probably if the Charter Oak Park track, at Hartford, Conn., had not been soaked and slippery from the rains of the days preceding, Joe Grennon, who drove the Mercer in the meet that was staged there by E. A. Powell on Saturday last, 26th inst., would not have been able to bag three of the six competitive events which graced the program, and to tie a fourth. As it was, however, the drivers of the heavier cars "played safe" to avoid skidding, and as a consequence Grennon took a three-mile free-for all, a single mile free-for-all and a ten-mile Class E event and finished neck and neck with Harry Kyle (Pope) in a ten-mile free-for-all. The five-mile free-for-all handicap went to Louis Menenghetti, who further distinguished himself by completing a single mile time trial in 57⅘ seconds, driving a Fiat. Harry Kyle (Pope) took a five-mile contest for cars with displacements of under 451 inches, completing the distance in 6:20, and leading home Henri Hickman in a Mercedes, who had trailed him for the whole distance. The summary:

Five miles, for cars with displacements of under 450 inches—Won by Harry Kyle (Pope); second, Henri Hickman (Mercedes). Time, 6:20.

Three miles, free-for-all—Won by Joe Grennon (Mercer); second, Harry Kyle (Pope); third, Henri Hickman (Mercedes). Time, 3:16⅗.

One mile, time trial—Louis Menenghetti (Fiat). Time, 0:57⅘.

Ten miles, free-for-all—Dead heat between Harry Kyle (Pope) and Joe Grennon (Mercer); second, Henri Hickman (Mercedes). Time, 10:02.

One mile, free-for-all—Won by Joe Grennon (Mercer); second, Harry Kyle (Pope); third, Henri Hickman (Mercedes). Time, 1:08.

Five miles, free-for-all, handicap—Won by Louis Menenghetti (Fiat); second, Joe Grennon (Mercer); third, Harry Kyle (Pope); fourth, Henri Hickman (Mercedes). Time, 5:12.

Ten miles, for cars with displacements of under 601 inches—Won by Joe Grennon (Mercer); second, Harry Kyle (Pope); third, Henri Hickman (Mercedes); fourth, Louis Menenghetti (Mercedes). Time, 10:22.

One mile, time trial—Crawford (Fiat). Time, 1:15.

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"AROUND LAKE MICHIGAN" PROVES GRUELING CONTEST

But Few Survive and Only Three Retain Clean Scores—Roads and Rain Try Men's Souls and Cars' Metal.

"Never again!" with both hands up, is the substance of the opinions of the ten contenders who finished the 1,070-mile course of the Around Lake Michigan reliability tour of the Chicago Motor Club, which was brought to a close Sunday evening last, 27th inst., when the weary drivers piloted their machines into the Windy City. Doubtless, were either of the five starters who were unable to finish the course asked for an opinion, a statement equally as strong, if not stronger, would be forthcoming. Of the ten who survived the grind, for grind it was from start to finish, over roads, or so-called roads, hub deep in either sand or mud, so that the use of high gear was impossible for the greater part of the time and on occasion it was absolutely imperative to run for prolonged periods in low gear, and in the face of a chilly and almost incessant downpour, which made the bad roads even more soul trying, but three were able to pull through without incurring penalty. They were Gustave Moncmeier, who drove a Staver in the touring car class, and Joseph Wicke and F. Salisbury, both of whom drove Moline cars in the roadster class. Moncmeier's performance nets him the Stalnacker trophy, and the lots will decide which of the two winning Moline drivers is to receive the Luce trophy, the award in the roadster division. The Moline drivers naturally carried off the C. M. C. trophy for the best team work.



ALLEGED PUBLIC HIGHWAY NEAR LAPEER, MICH.



KAVANAUGH (MIDLAND) IN THE WILDS OF MICHIGAN



"ROAD" BETWEEN NEWBERRY AND ST. IGNACE, MICH.



TAYLOR (R. C. H.) "DRAWING" WATER NEAR ST. IGNACE

Of the 15 who left Chicago on Monday morning, October 21st, R. B. Gray (National) and M. M. Luce (Velie) dropped out before Escanaba, the night control, was reached on Tuesday. R. E. Maypole (Stutz) dropped out during the trip from Escanaba to Newberry, having broken a wheel. A. Monson (Bergdoll) received another 9 demerits for taking on water outside of controls, which brought his score up to 170 points, and K. Taylor in the R. C. H. received two black marks for like cause. T. R. Rooney (Bergdoll) and Claude Anderson (Stutz) brought their penalizations up to 30 and 189 points, respectively, for road work and for lateness at the controls. H. Branstetter (Kissel) burned his cultch and dropped out before the 170 miles to Newberry were covered.

The 60-mile run to Mackinaw City, which was made on the fourth day, occasioned the downfall from the perfect-score class of J. Hanson (Case), who received 2 points for stalling his motor, and A. M. Robbins (Abbott-Detroit), who received 3 for taking on water.

Traverse City, 109 miles from Mackinaw City, was reached on Friday evening. Not-

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withstanding the fact that during the run better roads were encountered than on the days previous, penalties were meted out to Hanson (Case), who received 38 points for road work when he lost a wheel; Monson (Bergdoll), who had 52 black marks added to his score when a pushrod broke, and Claude Anderson (Stutz), who received 57 points for time lost in repairing springs. B. Park in the R. C. H. failed to make the control in time and was eliminated.

During the run from Traverse City to Grand Rapids, Brolley was assessed 3 points for adjusting the clutch on his Velie; J. Hanson (Case) received 9 points for work on a broken spring; Monson (Bergdoll) annexed 64 points for a variety of trouble, and A. M. Robbins did not arrive for hours after the other cars had checked in.

The best roads of the trip were encountered on the last day's run, from Grand Rapids to Chicago, 217 miles, when the tour became a veritable joy ride. When the cars entered Chicago the scores were as follows:

Touring Car Class.

G. Moncmeier (Staver)	0
J. Brolley (Velie)	5
G. Knudson (Staver)	8
J. Hanson (Case)	50
M. Monsen (Bergdoll)	298
A. M. Robbins (Abbott-Detroit)	1,400
B. Park (R. C. H.)	Withdrawn
R. B. Gray (National)	Withdrawn

Roadster Class.

J. Wicke (Moline)	0
F. Salisbury (Moline)	0
T. Rooney (Bergdoll)	325
Claude Anderson (Stutz)	2,435
K. Taylor (R. C. H.)	Withdrawn
M. Luce (Velie)	Withdrawn
R. Maypole (Stutz)	Withdrawn

Glidden Finishes His Own Tour.

Escorted by a caravan of motorists, Chas. J. Glidden rode into New Orleans on Saturday afternoon last, 26th inst., and thereby completed his 1,600-mile tour from Detroit to the Gulf of Merico. Glidden, who occupied a Maxwell car, left the "Automobile Capital" on Monday, October 14th, accompanied by a second Maxwell car, piloted by A. V. Davis.

All went well throughout the first half of the journey—in fact, until after the tourists left Memphis, Tenn. Bad weather then set in and so hampered progress that on Tuesday, 22nd inst., the party was forced by roads that were almost impassable to cut short the day's journey and lay over at Clarksdale, Miss. The following day, however, the 75 miles to Lexington were completed, and on Thursday another 100 miles to Jackson were reeled off. The 200 miles between Jackson and Baton Rouge, La., were covered on Friday, and the remaining 75 miles to the Crescent City on Saturday morning. It took Glidden 12 days to complete the run.

TWO ACCIDENTS CAUSE CUT IN EVENTFUL YORK PROGRAM

Both the Result of Bursting Tires—Minker and Freitag Gather Glory Before the Meet is Called.

Two accidents, both the result of bursting tires, and one of which was sufficiently serious to warrant calling off the remainder of the program, marred the race meet which was staged on the half-mile track on the York Fair grounds on Saturday last, 26th inst., by the York (Pa.) Motor Club. The first accident occurred when Schneider (Pratt) lost a tire in the five-mile free-for-all, which resulted in his going through the fence. Happily no real damage was done. The second accident occurred in precisely the same manner during the running of the ten-mile free-for-all, when Gilliard's Pullman burst a tire and overturned, injuring both the driver and his mechanician, George Ickes, so seriously that their removal to the hospital was necessary. Two of the four numbers that were run off before the accident occurred went to Minker in a Kline; the others were won by Freitag (Mercer) and Richley (Buick), respectively. The summary:

Five miles, for cars with displacements of under 301 inches—Won by Freitag (Mercer); second, Lambright (Ford); third, Anderson (Pullman). Time, 6:29⅗.

Five miles, for cars with displacements of under 451 inches—Won by Minker (Kline); second, Anderson (Pullman); third, Richley (Buick); fourth, Freitag (Mercer). Time, 6:03⅕.

Five miles, for cars with displacements of under 601 inches—Won by Minker (Kline); second, Gillard (Pullman); third, Oden (Simplex); fourth, Anderson (Pullman). Time, 6:08⅗.

Five miles, free-for-all handicap—Won by Richley (Buick); second, Lambright (Ford); third, Minker (Kline); fourth, Freitag (Mercer); fifth, Oden (Simplex). Time, 7:09⅘.

Wishart Cleans Up at White Plains.

All save one of the five events which were run on the half-mile track at the Westchester County Fair Grounds, White Plains, N. Y., on Saturday last, 26th inst., were easily accounted for by Spencer Wishart, who, as usual, piloted a Mercer. The event which escaped him fell to F. E. Wood (Mason), who covered five miles in 6:37½. It escaped Wishart because he was not a contender. Wishart's victories comprised a five-mile event for cars with displacements of under 451 inches, which he completed in 5:23¼; a single mile trial, covered in 1:11; a ten-mile free-for-all, in which his time was 12:45, and what proved to be the most interesting contest of the day, a five-mile free-for-all handicap, which he won in 6:21 from scratch. The summary:

Five miles, for cars with displacements of under 300 inches—Won by F. E. Wood (Mason); second, Thomas Costello (Maxwell). Time, 6:37½.

Five miles, for cars with displacements of under 451 inches—Won by Spencer Wishart (Mercer); second, Paul G. Thebaud, Jr. (G. J. G.); third, F. E. Wood (Mason). Time, 5:23¼.

Ten miles, free-for-all—Won by Spencer Wishart (Mercer); second, Paul G. Thebaud, Jr. (G. J. G.). Time, 12:45.

Five miles, free-for-all, handicap—Won by Spencer Wishart (Mercer), scratch; second, Paul G. Thebaud, Jr. (G. J. G.), 15 seconds; third, F. E. Wood (Mason), 45 seconds. Time, 6:21.

Sloan's Troupe Entertains Tennessee.

By accounting for two of the four competitive events which were included in the program offered by A. J. Sloan at Nashville, Tenn., Saturday last, 26th inst., Joe Nikrent earned the better part of the honors of the meet. Nikrent's victories, achieved in a Case car ,included the feature event of the day, a five-mile free-for-all handicap, and a match race in which he beat out Ulbrecht, also in a Case. Disbrow drove the Simplex to victory in a five-mile free-for-all and also covered a single mile in the reconstructed Fiat in 54 seconds. The Australian pursuit, which went for ten miles, went to William Endicott (Case). Summary:

Five miles, match race—Won by Joe Nikrent (Case); second, Ulbrecht (Case). Time, 5:12.

Ten miles, Australian pursuit—Won by William Endicott (Case); second, Ulbrecht (Case). Time, 9:38⅗.

Five miles, free-for-all—Won by Louis Disbrow (Simplex); second, William Endicott (Case). Time, 4:58⅕.

Five miles, free-for-all, handicap—Won by Joe Nikrent (Case); second, Ulbrecht (Case); third, Disbrow (Simplex). Time, 4:30.

Disqualify Two for Unsanctioned Racing.

Charles W. Canner, a registered racing driver who promoted and participated in various and sundry unsanctioned meets throughout the Middle West during the past few months, has been suspended by the contest board until January 1, 1915. F. V. Rickenbacher, who also participated in the meets which Canner promoted, was suspended until January 1, 1914.

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CANFIELD PATENT DECLARED NOT BASIC

(Continued from page 6.)

the engine and in which fiber or soapstone soaked in lard formed the insulating material.

Judge Mayer considered that the evidence established that the "modern operative spark plug with porcelain insulation" was due not to Canfield but "was only made practicable through the joint efforts of the porcelain makers and the spark plug manufacturers." He found, however, another "fatal bar" to a judgment in favor of the Canfield interests, the "bar" consisting substantially of lack of prosecution by those who owned the patent. He pointed out that even the complainant in the present case, Mosler himself, had marketed a spark plug which infringed the Canfield patent as early as 1902 or 1903, and neither Mosler nor any other of those to whom the patent had been assigned took any action to establish its validity during a period of 11 years. He, therefore, believed that the defendant and manufacturers of such spark plugs as those in question were justified in considering the Canfield patent of doubtful validity "by the inertia of the assignees of *this* patent, which non-action is strongly suggestive of lack of confidence in the validity of the patent." The court's decision in full is as follows:

The invention claimed relates to the means for igniting the explosive charge of gas or hydrocarbon vapor in internal combustion engines, such as are commonly used for the propulsion of automobiles and small boats and various other purposes.

This is now almost universally accomplished, in engines of the character referred to, by an electric spark which is formed at the proper instant between two electrodes which are situated within the explosion space of the engine and are connected with a suitable source of electric energy. It is contended that the invention covered by the patent in suit relates to ignition devices of this kind as applied to compression engines, in which the charge of gas or vapor is compressed before ignition. As is well known, there are two systems of electric ignition—the "make and break" and the "jump spark." The invention here claimed belongs to the "jump spark" system.

To understand the problem of ignition which Canfield endeavored to solve, it is necessary, of course, to ascertain, if possible, the state of the prior art.

Canfield began his experiment in 1895 at Manistee, Mich., applied for letters patent in August, 1897, and obtained them in October, 1898

Dugald Clerk is regarded by many as the leading expert in the world on internal combustion engines. His work, "The Gas and Oil Engine," was accepted on this circuit as authority in the noted Selden patent litigation, and he is spoken of as one who has testified "with admirable clearness" as an expert.

The eighth edition (1896) of the work referred to is in evidence.

From Mr. Clerk's observations, it abundantly appears that the problem of ignition in the compression engine was far from solution, that the electric methods were "at best uncertain" and that much remained "to be accomplished before flame is as completely and effectively under control as steam." (Clerk's "The Gas and Oil Engine," p. 202, 05, 225.)

Canfield manifestly understood the difficulties referred to by Clerk and set about to overcome them. In March, 1895, Manistee Iron Works Company, apparently a reputable concern, began to build an engine at the instance of Canfield. This engine was finished in the summer of 1895 and had at first a plain head with fiber plugs. In this original head, experiments were made with mica, fiber and soapstone insulators.

Later—in February, 1896—other heads (Complainant's Exhibits: Engine Heads, Feb., 1896, R. & L.) were made by the Manistee Works, the engine then having, in the heads, soapstone plugs with recesses around the electrodes, and this engine with these heads was operated in the shops of the Manistee Works for about thirty days in the spring of 1896.

The evidence satisfactorily establishes that the engine shown in complainant's exhibits (photographs Nos. 1, 2, 3 and 4) was used in March, 1896, with the heads referred to (Engine Heads, Feb., 1896, R. & L.) and that Canfield suggested and directed the making of the insulators in these heads around the electrodes as shown in the exhibits.

These dates are important because of the defense of prior use of a plug, called in this suit the Raabe plug. The evidence as to this prior use is, to say the least, not convincing but, in any event, the Canfield structure was a month ahead of the Raabe plug.

We must now examine the claims of the patent, which are as follows:

1. In a gas, oil or vapor engine igniter or sparker a recess or counterbore around the electrode or electrodes and above its or their sparking-points when said electrodes are used vertically, for the purpose of preventing an injurious accumulation of the products of combustion or other foul matter on the insulation of said electrodes, substantially as and for the purpose set forth.

2. In a gas, oil or vapor engine igniter or sparker a recess or counterbore of such size and depth as to prevent the explosive mixture used in the cylinder from circulating into said counterbore or recess far enough to come in contact with its deepest part around the electrode or electrodes at or near the point where said electrode or electrodes leave the insulator to enter the cylinder or firing-chamber, for the purpose of preventing an injurious accumulation of the products of combustion or other foul matter on the insulation of said electrodes, substantially as and for the purpose set forth.

Complainant differentiates these claims, urging that Claim 1 applies to all of the figures of the patent drawings, not only to those in which that part of the electrode within the recess is bare but also to those in which that part of the electrode within the recess is itself covered with insulation, while Claim 2 is applicable only to those forms in which that part of the electrode within the recess is bare. It is alleged that six spark plugs (Complts. 1-6) infringe and under this interpretation all would infringe Claim 1 and four (Complts. 1-4) would infringe Claim 2.

This construction of the claims seems to me to be strained and antagonistic to the clear import of the language employed; and if there be any doubt as to the meaning of that language, resort to the file wrapper will resolve that doubt in favor of the contention of defendant, that there is nothing to limit Claim 2 to a tubular wall of insulation spaced from the electrode.

Briefly stated then, Canfield believed that he had found a method of insulating the electrodes of gas, oil or vapor engines that would not foul injuriously, but be at all times in reliable working order, and he claimed as his invention the recess or counterbore around the electrodes, deeper than it was made, and upon that claim his patent must stand or fall.

Defendant insists that this claim was fully anticipated in the prior art, and he has introduced in evidence a considerable number of prior patents and publications. The only one which is debatably close is the structure shown in "Schotteler's 'Die Gasmaschine.'"

Fortunately I am aided in this case by the tangible existence of what Judge Hough has called that wholly ideal and fictitious person, "the man skilled in the art." (172 Fed. Rep., 923.)

If the solution of the problem was not revealed to Dugald Clerk by "Die Gasmaschine," I am sure I cannot discover it. "Dis Gasmaschine" was published in 1890. Clerk wrote of the problems of ignition in 1896. He was undoubtedly thoroughly familiar with Schlottler's work, for in his preface to his first edition (1896) he expresses his indebtedness to Professor Schottler, among others. In his 1896 book, Clerk shows that he has continued to study and analyze Schottler's contributions to this art and science (pp. 180, 253, 256), and, surely, if "Die Gasmaschine" had made disclosure, Clerk would never have indulged in the observations hereinbefore referred to.

We thus find Canfield in 1895 having an idea which had not been anticipated. Did that idea take practical form so as to enable the man "skilled in the art" to make an operative structure, and did that idea, as stated in the patent, disclose the information necessary to the manufacture of the modern alleged infringing spark plug (Exhibits 1-6)?

There is no disclosure in the patent of what material the insulation should be nor how to keep it tight nor how to prevent the destruction of the plug by the heat.

As defendant's expert says:

It is very evident from the specification that the patentee's conceptions were theoretical merely, and that he viewed the matter from the mechanical side only, and had no idea whatever of the electrical nature of the problem. Thus the matter which is, most of all, fundamental, and without which no structure could succeed—namely, the nature of the material—is not referred to at all, and there is no insulating material known to me which could possibly be used successfully in the patentee's construction. Again, the fundamental matter of mechanical construction, such as the prevention of leakage, and the allowance for expansion, is neither referred to in the specification, nor provided for in the drawings. I refer here to the leakage of gases under the working pressures. Again, the patentee gives no information whatever as to how oil is to be prevented from working into and around the insulation, and, by carbonizing, destroying its insulating value.

Complainant's expert (distinguished in this art), in his prima facie testimony and prior to the testimony as to the use of soapstone, suggested porcelain and mica as the insulating material. It is clearly shown that mica was impracticable. So was fiber. So was soapstone until soaked with lard, baked and then shrunk in.

I am satisfied that the theory of defendant's expert as to porcelain, is right. He testified that if porcelain is to be exposed to high temperature it cannot be practically made in large masses (such as Canfield's patent may be deemed to have suggested), without certain destruction by the heat. (D. R. 132.)

Defendant's expert explains the success of the modern spark plug as follows:

The use of porcelain as an insulator in the modern spark-plug is successful at the present time, only becouse the joint efforts of the porcelain makers and the spark-plug manufacturers have resulted in qualities of porcelains and modes of mounting which enable the porcelain to expand and contract freely and hold it in such a manner that the part clamped has a small mass to give rise to disruptive internal strains. . . .

Complainant's expert attempted to explain away these defects by saying (p. 392, C. R.):

I am of the opinion that porcelain could have been employed successfully in large masses without packing, if the method of construction had been used as that employed with the soapstone insulation, even in spite of its hard and brittle nature.

In other words, if the porcelain was soaked in oil, baked and then ground off and shrunk into the heads, as was done with the soapstone, the porcelain might have been made to work, but nothing of this nature is mentioned in the patent.

Defendant could not be expected to know anything about soapstone or shrinking it in or treating it with lard oil and baking it, all of which were necessary in the Canfield device, as none of this information was contained in the patent, but came out for the first time on the rebuttal proofs. Following merely the patent and what was known in the art at the time, defendant made an engine head (Defendant's Exhibit "Canfield's Cylinder Head"), also three porcelains such as shown in the drawings, which have been introduced as Defendant's Exhibits "Canfield Insulators" Nos. 1, 2 and 3, and tried them out exactly as described in the patent. As they were not shrunk into the head, but followed the patent exactly, they broke.

Further experiments were made by complainant, but these only served to confirm the contentions of defendant.

Further reference might be made to the testimony in support of defendant's position on this branch, but enough has been pointed out to indicate that the spark-plugs in suit (Exhibits 1-6) do not infringe

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and that the patent must be limited to the particular forms which Canfield illustrated.

I am not unmindful of the argument that Canfield did his work in the early stages of the art to which his invention belongs, but spark-plugs, though called by other names, were known to the art, and had Canfield found the secret of an operative structure, he could have expressed it in simple terms. I think the evidence establishes that the modern operative spark plug with porcelain insulation was only made practicable through the joint efforts of the porcelain makers and the spark-plug manufacturers as hereinbefore described.

There is, however, another and, it seems to me, fatal bar to a decree in favor of complainant.

After Canfield's death (sometime prior to 1901), the patent was assigned a number of times until it was acquired by complainant in March, 1909.

As far back as 1901, the Torbensen Gear, Incorporated, was putting on the market, in a comparatively large way, the plug described in evidence as the "T. G. I. plug."

In February or March, 1904, the Rajah Auto-Supply Company (which had bought the spark-plug business of the Torbensen Co.), began putting on the market the Rajah plug (Complainant's Exhibit 5).

In August, 1904, the Olds Motor Works of Detroit, per a Mr. Whittemore, notified the Torbensen concern that they controlled Letters Patent 612,701, and that the Torbensen Co. was infringing the Canfield patent. Neither the Torbensen nor Rajah companies ceased manufacture (D. R. 62 and 63), nor was suit begun.

It will be observed that this notice did not come from a poor inventor or his executor, but from automobile manufacturers.

Mezger's plug (Complaint's Exhibit 1) has been on the market since about 1902. (Mezger obtained a patent in 1902, D. R. 78, 305.)

The plug, Complainant's Exhibit 6, has been on the market since about 1902.

Other alleged infringing plugs have been on the market since about 1906, 1907 or 1908.

This very complainant has had a plug (Mosler Spitfire) on the market since 1902 or 1903, and that plug (if he is right now) infringed the Canfield patent.

Many other plugs have been on the market which possibly have infringed this patent, if complainant is right.

Nowhere does it appear that the slightest effort has been made to stop the alleged infringing, unless it be the sending of the letter on behalf of the Olds Works, and that went no further.

The Association Patents Company owned this patent from 1906 until it was assigned to complainant in 1909. There is nothing to show that Associated Patents Company manufactured or marketed spark-plugs made under the Canfield patent.

I gather from the record (C. R. 496) that Association Patents Company is some sort of a corporation that deals in patents and licenses, and I find that complainant company was desirous, among other things, "of acquiring all damages and profits recoverable by said Association Patents Company from any and every party for any and every infringement of said 'letters patent' and each of them and all claims and demands for damages and profits." (C. R. 500-501.)

It is stated in complainant's brief (page 1):

Although it does not appear on the record, in so many words, that John Lurie is a nominal defendant and that the defenes of this suit is carried on by manufacturers of the infringing spark plugs, that such is the fact is a natural inference and one that will not be disputed, for among the spark plugs, the sale of which by John Lurie is complained of in the Bill of Complaint, are the spark plugs of certain well known manufacturers in the United States, and the defendant has been represented throughout the proceedings in this case, prior to the final hearing, by no less than three able counsel who are not associated in business and who happen to represent regularly two of these manufacturers of the alleged infringing spark plugs.

I presume this statement is correct and that defendant's counsel will not contravert it.

The suit, thus, is really against the manufacturers, but whether against them or not, defendant and others have been notoriously selling these goods to a large extent for a number of years. (D. R. 79).

Here then we have a situation where nothing was done by the patentee or his assigns for eleven years, while others risked their money in putting on the market an improved and very important device in an industry which has developed by leaps and bounds and which has revolutionized travel for utility and pleasure. While the public has been getting the benefit of the use of the devices and of competition between manufacturers, the assignees of this patent have sat supinely by, not even bringing one suit against any one of many open alleged infringers.

Then comes along an ex-infringer (on its own theory) who has bought the rights under this and another patent, and asks a court of equity to fill its treasury with license fees and damage money.

It is no excuse that complainant obtained its title only in 1909. Its claim is affected by the laches and the want of equity of its assignors.

The defense of laches is not tested by time alone. Lapse of time may be well explained, but, on the other hand, even a comparatively short time may constitute laches when the conduct of the slothful is such as to induce others, in good faith, to expend money and take the risks of enterprise.

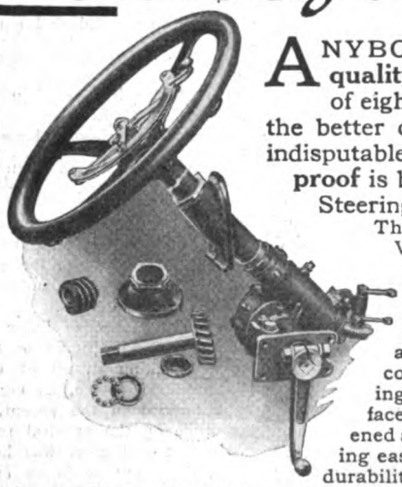
I think this defendant and the manufacturers of the goods in question, have acted in good faith, in the belief that the patent was of no, or, in any event, doubtful validity, and they were justified in that belief by the inertia of the assignees of this patent, which non-action was strongly suggestive of lack of confidence in the validity of the patent. The court would go a long distance to protect the inventor who is ahead of his times and who, unable to interest capital, finds that some one has stolen the fruits of his genius.

But that is not this case.

This case calls rather within the principles stated by Judge Coxe in Richardson v. Osborne, 82 Fed. Rep., 95 (affirmed 93 Fed. Rep., 828).

The patent is sustained within the limits here indicated, and it is held that there is no infringement. The bill is dismissed with costs.

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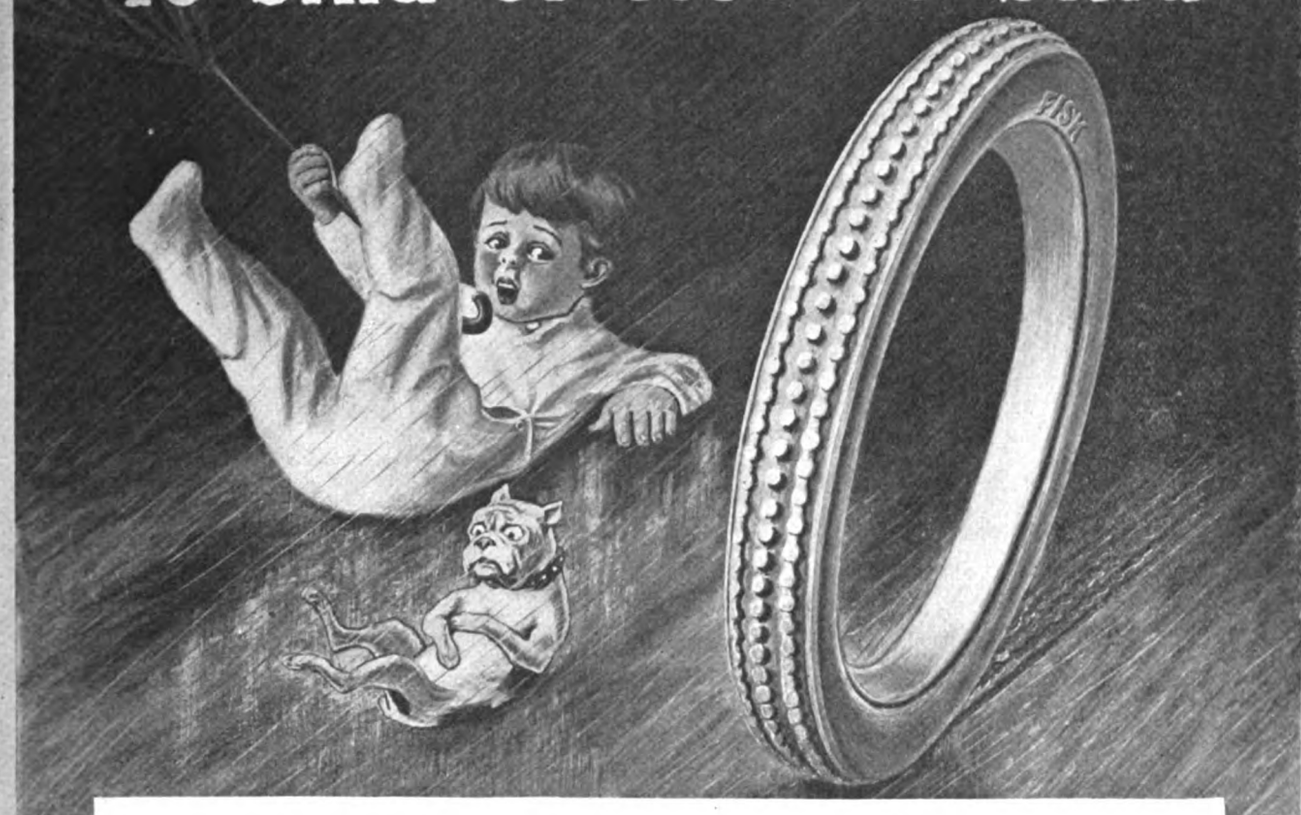
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With This Tire and the Accompanying Design We Are Appealing, Through Our National Advertising, to the Car Owner.

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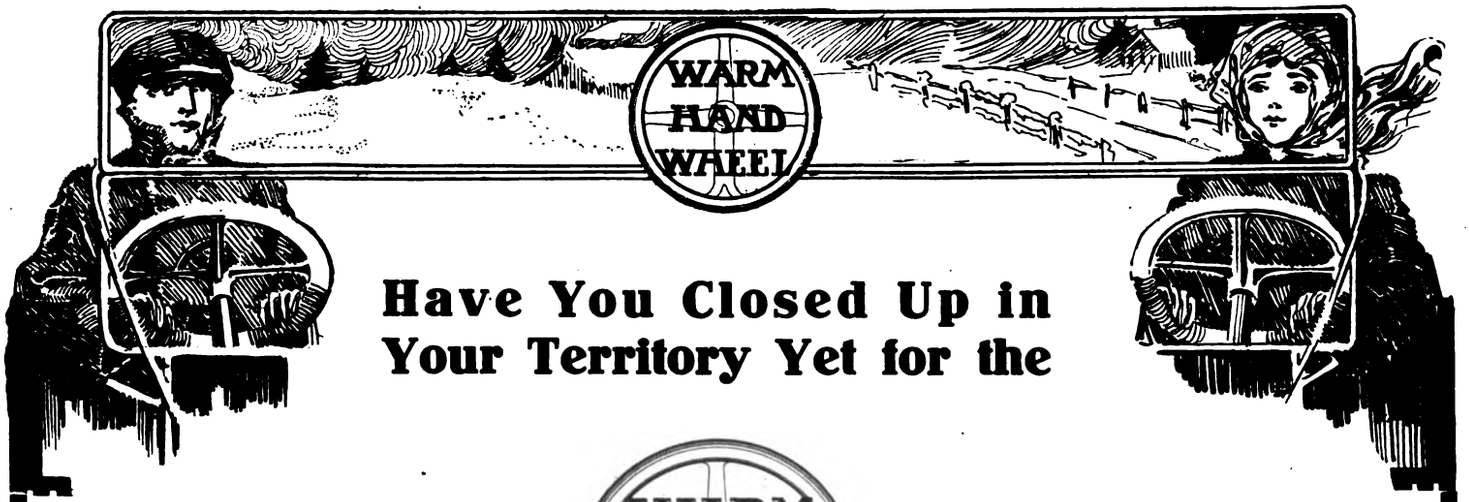
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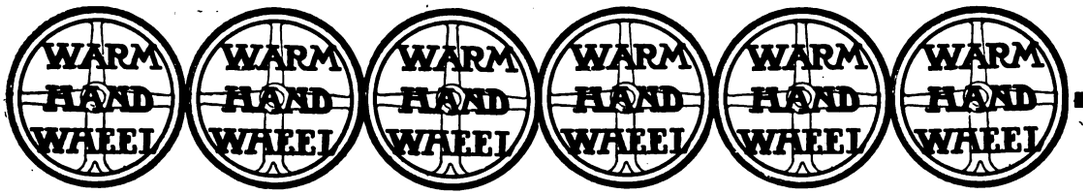
Not only will the Warm Hand Wheel make money for the dealer who sells it as a purely sales proposition, but every man who sells an automobile owes it to himself to boost hard for the Warm Hand Wheel—for the reason that every Warm Hand Wheel sold enables the car owner to get more months of service out of his car with comfort than he has ever been able to obtain before.

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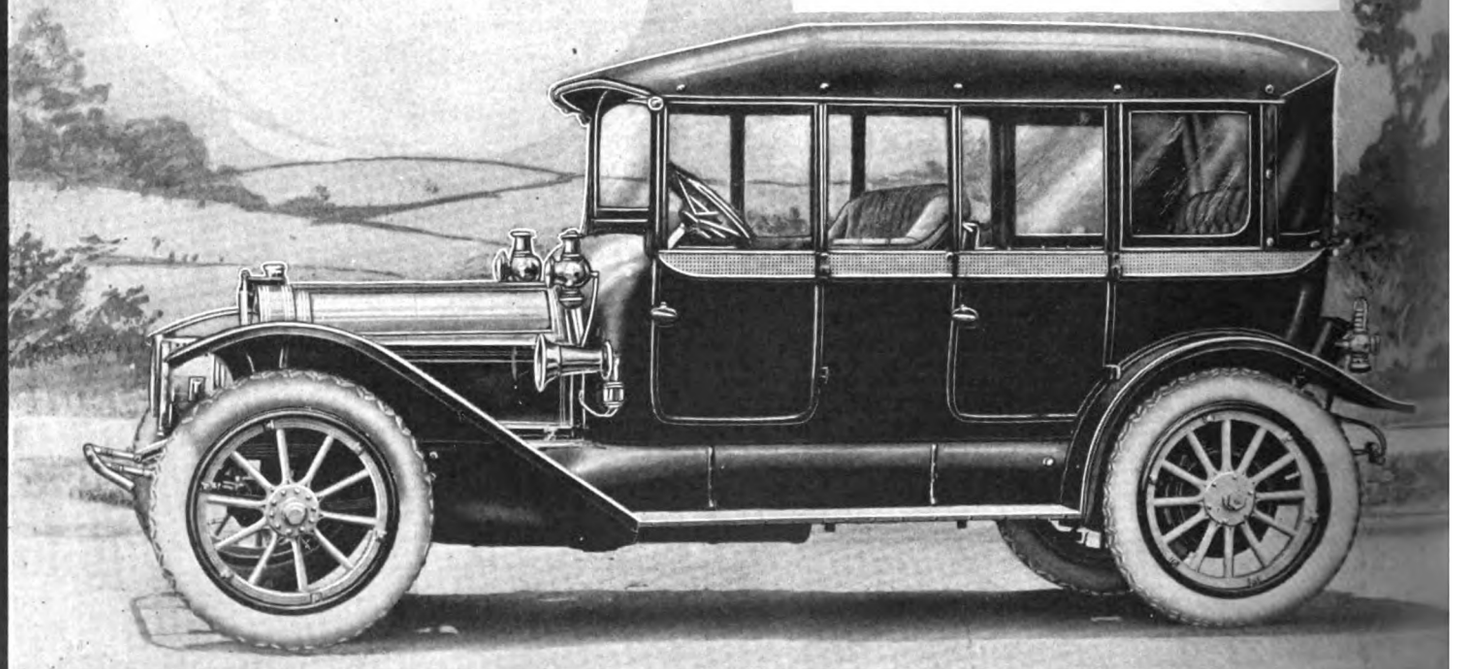
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More Than An Emergency Horn.

BEFORE the advent of the TUTO horn there was actual need for a separate one-tone-loud-emergency-signal as a supplement to the bulb horn.

¶ The fact that these electric horns have but one loud note, makes it out of the question to use the same constantly for regular service.

¶ Thus, this single-note loud electric horn does not displace the bulb horn, merely supplements it, and requires that two methods of operation be employed, that of working the bulb and the pressing of the button.

¶ In the case of a close range emergency, there is not sufficient time to go from the bulb to the button, so that this combination of two horns promotes confusion.

¶ On the other hand, the TUTO horn, does all of the signalling of the car in the most simple manner and with one horn mechanism and one operating button—a slight pressure of the latter gives the low service signal which is effective 90% of the time and which completely displaces the bulb horn; a full pressure on the same button instantly causes the loud emergency signal to sound, and no thought or movement of the hand is necessary.

¶ In fact, the going from the service to the emergency note of the TUTO horn is automatic, as the spasmodic gripping of the steering wheel (upon which the button is mounted) will force the finger, which is already on the button for the low note, clear down.

¶ This is quicker than thought and has cleared many a TUTO-equipped car from tight places where serious or fatal accidents were imminent.

¶ There is no time to play with two signal controls in the case of an emergency, such as the going from a bulb to a button. This requires concentration of thought and subsequent action.

¶ It is better to do your thinking now and get the TUTO horn on your car. It is a complete signalling system, not merely an emergency signal.

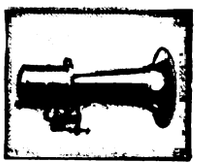


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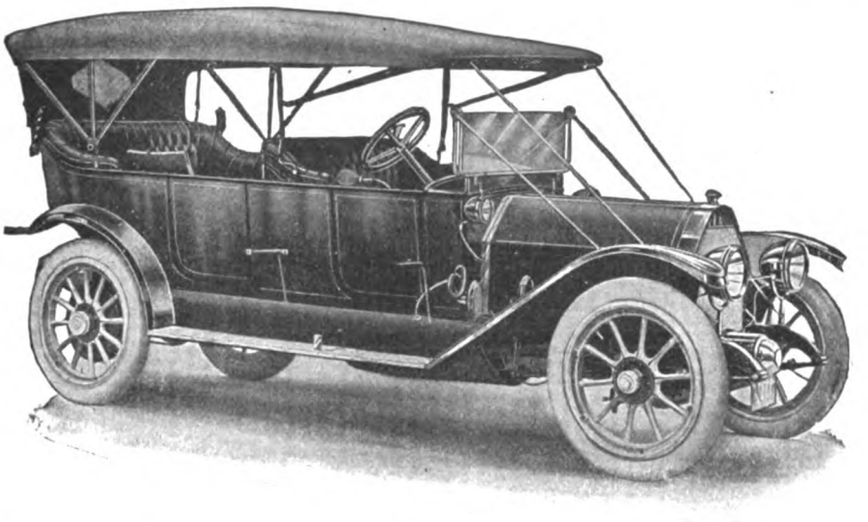
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Pullman



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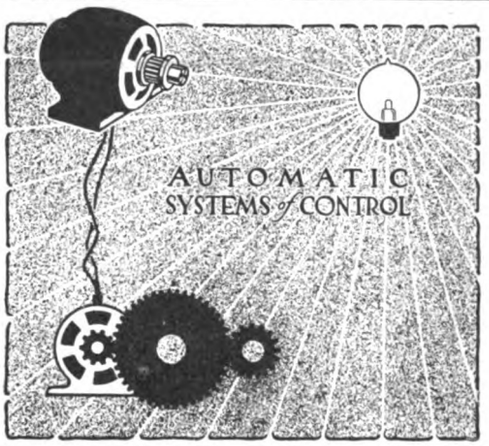
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Lighting - Starting

We paved the way

Two decades of unqualified success

Twenty years ago we were leaders in electric lighting appliances. We were pioneers then, but today the Ward Leonard Automatic Dynamo Lighting System stands forth as the most finished product of its kind.

A brief resume of some of the Ward Leonard achievements will serve to show why "Ward Leonard" is but another word for superiority in electric lighting systems.

Ward Leonard was the first to install an electric lighting system on railroads.

Ward Leonard evolved an electric elevator control system licensed to the Otis Elevator Company.

A Ward Leonard System of control is used to operate the turrets and heavy ordnance in the U. S. Navy.

Nearly all the modern steel rolling mills in the world are operated by Ward Leonard Systems of control.

The Ward Leonard railway system for trunk line electrification was adopted by the State Railways of Switzerland and is known as the Ward Leonard-Oerlikon System.

A matter of electrical control

The problem of dynamo lighting systems is nothing more than the automatic control of a dynamo and storage batteries.

For twenty years the Ward Leonard Company have manufactured dynamo controlling rheostats and storage battery controlling rheostats. The Ward Leonard Company have always been

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and are still the largest manufacturers of this apparatus.

More than one hundred patents have been issued under the Ward Leonard name.

What the Ward Leonard System accomplishes

The Ward Leonard Automatic Dynamo System keeps the storage batteries fully charged at all times, supplies the starting current, lights all the lamps, and supplies the energy for operating the electric horn. This system gives faultless service at a minimum price, is absolutely reliable and entirely foolproof.

Automatic control is necessary

But the distinctive feature of the Ward Leonard System lies in the perfection of its automatic control. No matter what speed the engine may attain, the charging amperes from the dynamo will remain between fixed limits because of the automatic action of an electrically operated switch. This automatic electric control is perfect. It is not based on mechanical control as are other systems. This is just the reason for Ward Leonard supremacy—it cannot go wrong.

The marvelous and substantial growth of the automobile industry has guaranteed the permanence of Ward Leonard supremacy because automobile manufacturers realize the need of a perfect lighting and starting system.

The system of the future must have the approval of the electrical engineer

The popular demand for lighting and starting devices has forced many engineers to adopt half-heartedly systems that would bridge them over; but the public demands efficient and reliable service, and the systems selected in the future will have to stand the test of true engineering design.

The Ward Leonard Automatic Dynamo System has won the endorsement of leading automobile engineers because—

First, a fool proof system

1. It has every essential feature of a real electric lighting plant without a single extra device or a single complicated part. In short it supplies electric energy for any electric requirement on a car.

Second, a switch does the trick

2. The Ward Leonard System is automatically perfect. An electrically operated switch automatically controls the number of charging amperes regardless of the motor's speed. Nothing mechanical about it. It's purely automatic, and it never fails.

Third, it needs no attention

3. The Ward Leonard System has no centrifugal governor, no friction drive, no compression rheostats or dash-pots and no ventilating fan. Just an electric switch that opens and closes. Simplicity itself.

The simplicity of the Ward Leonard System is the fundamental reason for its durability. There is nothing about it to get out of order, nothing to worry the motorist. You simply operate from your seat the switches necessary to light and start the car.

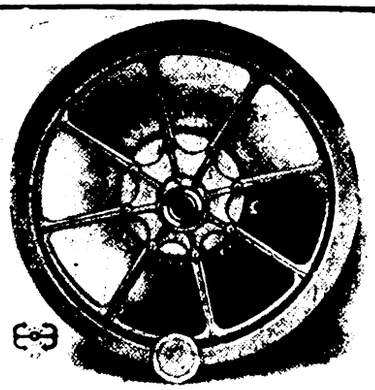
The Ward Leonard Lighting and Starting System will be the ultimate equipment of the car that is built for lasting service.

WARD LEONARD ELECTRIC CO.
Bronxville, N. Y.

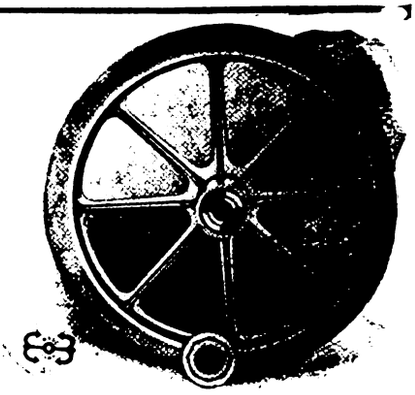
WARD LEONARD

Faultless Service

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SHELDON STEEL WHEEL



"Guaranteed to Outlast a Score of Cars"

SHELDON Axle Co., after months of close study of the perplexing wheel problem, presents here for the consideration of manufacturers and dealers—the SHELDON Steel Wheel.

We have analyzed every possibility—what a wheel ought to be and what it frequently is not. In the final analysis we now come to the trade with the announcement in effect that we have perfected a wheel which has absolutely overcome every weak point extant in wooden and wire wheels.

This wheel is of much lighter construction than the wooden wheel, owing to more economic disposition of material. It is unbreakable under the most extraordinary shocks, even withstanding most terrific side wipe tests under which a wire wheel would crumple up or a wooden wheel break. It is unaffected by time, moisture and every condition of heat and cold. In brief, the SHELDON Steel Wheel is indestructible.

This steel wheel increases the life of tires on a very high percentage basis, due to the superior resiliency, light weight at the periphery of the wheel, and the rapid radiation of frictional heat which keeps the tire cool under all conditions.

In the concrete analysis the SHELDON Steel Wheel lasts as long as the frame of the car, weighs less than the wooden wheel and saves tires—and while prices range somewhat higher than on wooden wheels, it remains that the quality added to the car so equipped will give an amount of prestige not possible with cars with wooden wheels.

These basic facts are plain and unconvertible, and engineers, purchasing agents and dealers should get the detailed information covering this most remarkable car refinement.

SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

Detroit Branch:
1215 Woodward Avenue

Chicago Branch:
68 East 12th Street

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EUROPEAN car manufacturers have universally adopted WIRE WHEELS—*the Rudge-Whitworth*

American Car Manufacturers are now advised that the Rudge-Whitworth Detachable Wire Wheels are made in the United States for all American Cars by the Standard Roller Bearing Company, of Philadelphia, under the Rudge-Whitworth patents and methods

Wire Wheel Advantages – Demountable, lighter, more resilient and twice as strong as wood wheels, save the tires, adapted to any axle and elegant in appearance

George W. Houk Co.

5001 Lancaster Avenue **PHILADELPHIA, PA.**

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Knox

MARTIN TRACTOR



Maximum Carrying Capacity
Minimum First Cost
Minimum Maintenance
Minimum Turning Radius

What It Is

Not a Theory But a Proven Success in a Year's Gruelling Work. Many in Successful Operation. 5 to 10 Ton Capacity. Full Details Explained in Tractor Catalog. Send Today.

A motor unit that may be attached to any heavy vehicle designed to be drawn by horses; the combination making a five-wheeled motor-drawn vehicle.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO EXCESSIVE COST OF RUBBER TIRES. Wagons have been doing good work for many years on steel tires and there is no reason why they will not continue to do so when drawn by the tractor; the heaviest part of the load is always carried on steel tires.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO EXCESSIVE VIBRATION ON STIFF SPRINGS. All working parts of the tractor are carried on springs as resilient as those of a pleasure car.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO SUDDEN STARTING OR STOPPING OF HEAVY LOADS. The cushioning of the shock between the engine and the load is one of the most important advantages gained, (fully explained in catalog).

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO NEGLECT ON ACCOUNT OF INACCESSIBILITY OF PARTS—all parts of the tractor being more accessible than on a touring car.

IT SAVES HEAVY MAINTENANCE CHARGES due to frame twist. The tractor accommodates itself to all road unevenness.

The single front wheel can be turned at 80 degrees angle, enabling the driver to back to any position or turn completely around in a narrow street.

Send for further information and prices

KNOX AUTOMOBILE COMPANY (Tractor Department) Springfield, Mass.

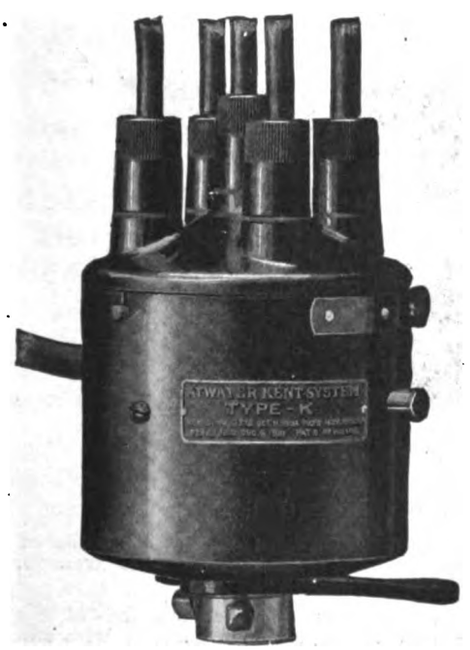
BRANCHES—New York, Chicago

AGENTS—The Knox Martin Tractor Is the Greatest Proposition in the Commercial Field Today. Fully Protected by Patents.

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The New Atwater Kent Ignition System

With Automatic SPARK ADVANCE



Of extreme interest to every motorist

THE Automatic Spark Advance feature of the Type "K" Atwater Kent System is a long stride forward in ignition practice.

With this device, the control of the spark timing is entirely automatic (although the hand lever can be used if desired). This means that the spark is always properly timed to get the greatest possible power from the motor at any speed from three to seventy miles per hour.

No human mind can follow accurately the speed variations in an automobile motor and accordingly regulate the spark setting to get the best results.

The automatic spark control of the Atwater Kent System is more than human in its performance—it is sensitive to the slightest variation in speed—immediate in its response and positive in its action. The operator can forget his spark lever, knowing that his spark is being better regulated than he can do it himself.

The increased safety due to the automatic retarding of the spark for starting is alone more than sufficient to commend it to the modern motorist.

The Type "K" System is especially adapted for use in conjunction with lighting and starting equipment, or as sole ignition in place of the high-tension magneto. We regard it as being fully up to the high standard of merit for which Atwater Kent equipment is known.

Interesting Booklet D and detailed information sent upon request.

DISTRIBUTORS

New York	E. J. Edmond Co.
Chicago	Motor Car Supply Co.
San Francisco, Chanslor & Lyon M. S. Co.,	Weinstock-Nichols Co.
Milwaukee	Julius Andrae & Sons.
Omaha	Omaha Rubber Co.
Chattanooga	Sanford Bros.
Dallas	Fisk Co. of Texas.
Denver	Auto Equipment Co.

Atwater Kent Mfg. Works
4940 Stenton Ave. Philadelphia, Pa.

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Quality M & P Price

M & P ELECTRIC VEHICLE DETROIT

A 1000 Pound Electric Truck

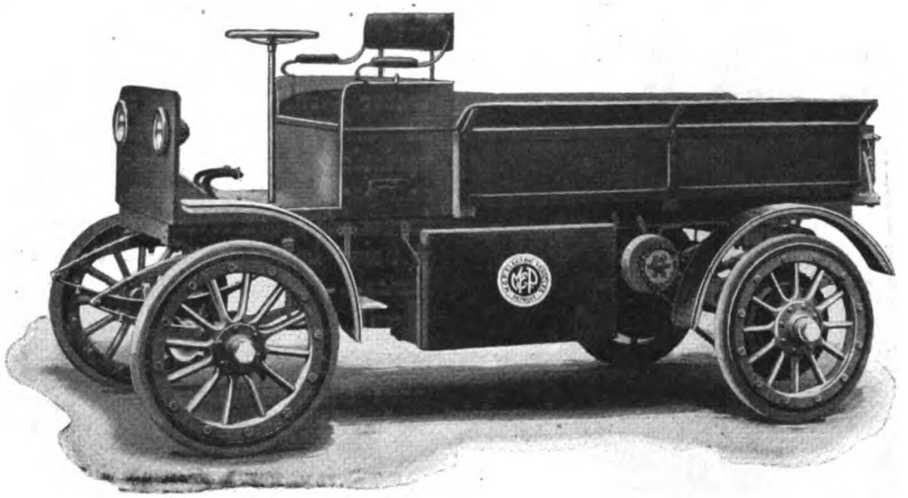
We Are Pioneers in the Production of a High-Grade Electric Truck at a Popular Price.

We built the "M & P" before we decided its selling price. We built it over designs which eliminated every point of weakness characterizing the average electric truck.

In the matter of materials no expense was spared; our specifications called for grades of steel and other metals higher than those ever contemplated by the average manufacturer.

We knew that in order to create popular demand we would have to place the prices within range of the masses we desired to serve. But we sought quality and efficiency first.

The result is before you in the M & P One Thousand Pound Electric Truck, which from tires to top embodies every point of excellence found in much higher priced trucks—also other improvements in design and construction never appearing in competitive vehicles.



Meets the Popular Demand

Now, the best thing about the M & P, Mr. Dealer, is that you can sell it to the rank and file of retail Dealers who, at this time, are using the semi-obsolete, expensive horse-drawn vehicle for transportation purposes.

You can tell your prospective customers (with our assurance back of every word) that the "M & P" will reduce his transportation expenses hundreds of dollars yearly—that it will give more service, more efficiency, more mileage at lowest cost.

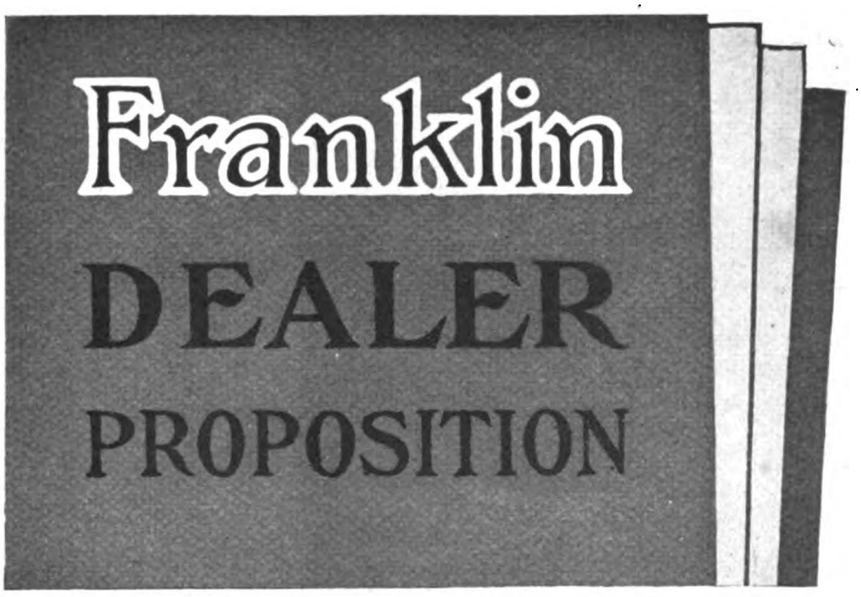
Don't Overlook This

Your share of the transaction is liberal and our proposition is bound to get your attention if you are a red-blooded, live-wire Dealer.

PRICES: Stripped $1450. Express Body $1500. Enclosed Body $1600... Write for our proposition.

M & P ELECTRIC VEHICLE CO., Franklin and Dubois Sts., Detroit, Mich.

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Send This Dealer Application

No matter what cars you *now* handle—get the Franklin Dealer Proposition. Franklin is now the third largest selling high priced car, and gaining rapidly on second.

Franklin cars are easy to sell because they (1) use less gasoline, averaging 20% to 35% more mileage per gallon; (2) use less oil, averaging 400 to 600 miles per gallon, without smoke; (3) use fewer tires, averaging 8,967 miles per set, the 1911 record; (4) travel faster in the long run, owners thinking little of making 200, 250 and 300 miles and more per day, without fatigue; (5) ride easier, bowling along so smoothly and comfortably, without jolt or jar, that driver and occupants do not realize that they are steadily traveling 30, 35, and 40 miles per hour; (6) and wear longer than other cars, many Franklin cars giving their owners continuous satisfactory service for 5, 6, 7 and 8 years.

We will send full particulars of the Franklin Dealer Proposition to any automobile dealer, garage owner or automobile owners financially capable and with the business experience to become a successful dealer, provided he will mail us this "dealer application" immediately.

The sending of this application does not obligate the sender or us. It is merely a convenient way to get at the facts.

THE FRANKLIN LINE

D Touring, 6 cylinder, 38 H. P., 5 passengers	$3500	M Little Six, Thirty, Touring, 5 passengers	$2800
D Torpedo-phaeton, 6 cylinder, 38 H. P., 4 passengers	$3500	M Little Six, Thirty, Victoria-phaeton, 2 passengers	$2800
H Touring, 6 cylinder, 38 H. P., 7 passengers	$3750	G Touring, 4 cylinder, 25 H. P., 5 passengers	$2000
H Limousine, 6 cylinder, 38 H. P., 7 passengers, 5 passengers inside	$4750	G Runabout, 4 cylinder, 18 H. P., 2 passengers	$1650

FRANKLIN AUTOMOBILE COMPANY
Syracuse, New York

DEALER APPLICATION

FRANKLIN AUTOMOBILE CO., Syracuse, N. Y.

Without obligating me please send your "Dealer Proposition" as advertised in October 31 issue Motor World.

Name .....

Address .....

Available Capital .....

References 1 .....

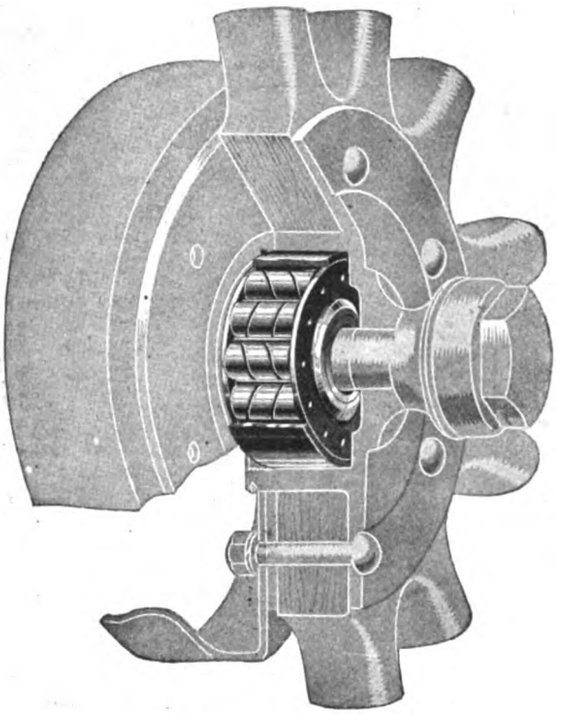
2 .....

3 .....

I handle the following cars:

.....

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A Load Well Borne

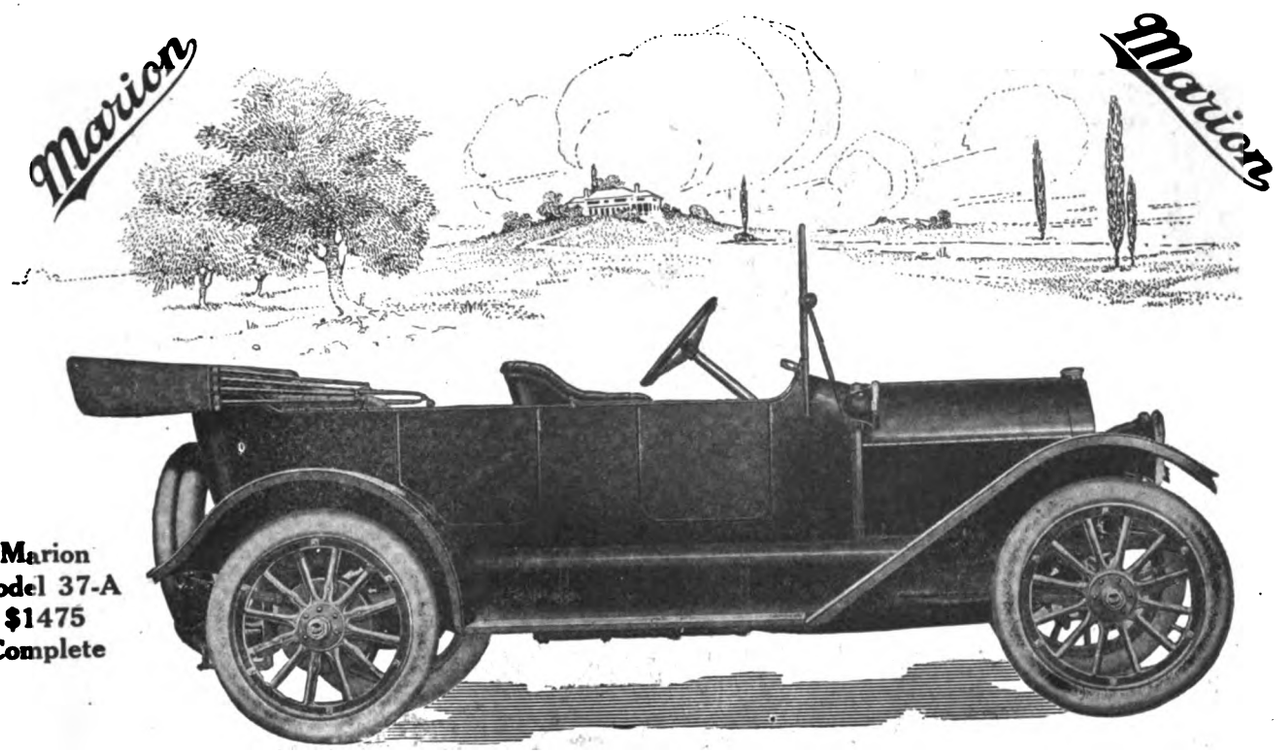
FLOATING ON ONE BEARING the rear wheel of many a car carries the modern motorist swiftly, smoothly and surely to his destination. Semi and full floating axles, each in turn, have enjoyed popularity. These types have been described in print so much of late that finally the one word—floating—has seemed the "open sesame" to all advantages.

GREAT IS THE GAIN when linked to this same floating principle is employed the more modern construction embodying but a single bearing. Efficiency, durability, economy and quietness of operation are points that may be mentioned in its favor; and axle shafts can readily be withdrawn for taking out the differential gears when that is necessary.

USE THIS WITH HYATT bearing and no better axle can be built today. The load is carried on a line not a point as in ball bearings. Close to one hundred thousand cars will this year, in floating axles, profit by Hyatt flexibility, strength, and ease of lubrication, efficiency and silence.

Hyatt Roller Bearing Co.
Detroit, Michigan

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Marion
Model 37-A
$1475
Complete

Here Is A Car Built to Meet Your Conditions

MARION motor cars are built with the definite idea of their giving satisfactory service to every class of motorists. They are luxurious and refined as well as sturdy, staunch and strong.

More Marion cars are in the hands of experienced motorists, who know the value of good cars, than of any other people because they meet every road condition.

Backed by ten years of success this newest and best Marion is a car on which you can not go wrong. It is the most improved car of the season—the talk of automobilists this fall. It is the largest, most completely equipped, luxurious and powerful car anywhere near $1500.

THE "proof of the pudding is in the eating." This car shows for itself. Look at it. Measure it. Feel of it. Ride in it.

You can boast of owning a Marion car. Its style and beauty give it distinction. Its strength and stability make it absolutely dependable. Marion owners are always touring.

It is a large five-passenger car with deep upholstering. Lots of width, lots of breadth. It is finished either in a rich Brewster green or deep wine color. Long wheel base and springs of flexible imported steel make it ride with exceptional ease. It has a quiet, flexible, economcial motor, 30-40 horsepower.

Everything You Need in a Motor Car

Disco Self-Starter
Prest-O-Lite Tank
Warner Speedometer
Nickel-Plated Trimmings
Concealed Tool Boxes
Center Control
Q. D. Demountable Rims, One Extra
Mohair Top, Boot, Storm Curtains
Brewster Green or Deep Wine Color
Deep Upholstering
Dynamo Electric Lighting System
80-Hour Storage Battery
Foot Rest, Robe Rail
Ventilating Plate-Glass Windshields
Tools, Tire Irons, Kit

Taken from any standpoint there is no other moderate priced car which offers you so much for your money. We urge you to see the Marion 37-A or send to us immediately for illustrated literature.

To bona fide automobile dealers we offer the fairest sales agreement ever written. Ask about it without delay.

THE MARION MOTOR CAR COMPANY, 918 Oliver Avenue, Indianapolis

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The EISEMANN



Coincidentally, with our occupancy of a factory three times as large as that just vacated, we beg to announce to the trade and to the automobile public, the making and marketing of a new Eisemann product.

The Type E. B. High Tension System

With Separate Transformer Coil

This new Eisemann dual system is brought out to meet the constantly increasing demand for an ignition system that is low in cost, yet high in efficiency—and at the same time fully up to the standard of excellence inherent in all Eisemann products.

This system consists of a magneto in which only the primary current is generated and a separate transformer coil, in which the current is stepped up to its high tension.

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MAGNETO

This type E. B. high tension system is remarkably compact, simple and durable as well as high in efficiency. The coil, in which is included a switch and a mechanical device for starting "on the spark," is placed through the dash as is the case with the coils of all of our other systems. The make and break mechanism can be entirely removed without the use of any tool whatsoever —a point of remarkable advantage and merit.

This new system is simply an addition to our other successful models and systems and with greatly increased facilities both in the making and marketing of our products we shall continue our past successes laying special stress on the type E. M. direct high tension magneto and all of the various models equipped with our automatic spark control.

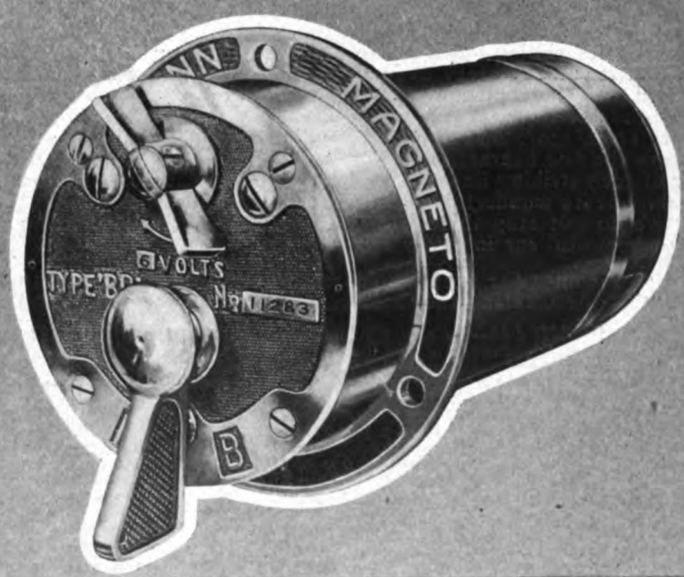
The Eisemann Magneto Company

SALES AND GENERAL OFFICES:

225-227 West 57th Street
New York City

INDIANAPOLIS
514 North Capitol Avenue

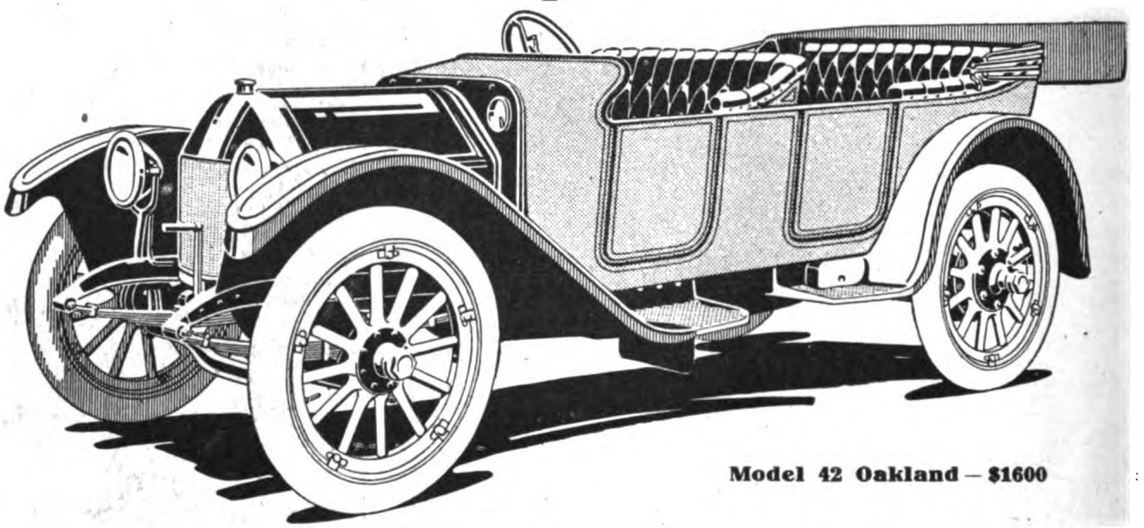
DETROIT
6 Goldberg Building



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Oakland

"The Car with a Conscience"



Model 42 Oakland — $1600

The Squarest Automobile "Ad" Ever Printed

This is, without question, the squarest automobile advertisement ever printed.

It marks an epoch in the advertising of automobiles.

It's the new way. It's the right way.

It's going to be the way of those who dare—of those who know they are in the right—of those who know they are supreme—of those whose position is safe—whose claims will stand the most searching examination.

It's going to be the Oakland way—because we dare—because our position is safe.

Listen to this new way of convincing you of the merits of Oakland cars:

The Oakland is the first of the new era in motor car construction.

It represents the **best** and **certain** of the old and the **safe** and **beautiful** of the new. To appreciate the full significance of this statement you must see 1913 Oaklands.

There are hundreds and more of five-passenger, four-cylinder cars—all similar in appearance—and there is the Oakland model of the same description but a car so different, so beautiful, so individual, that if you say every five-passenger, four-cylinder car made you would pick the Oakland as **the car** of the group.

A bold assertion but a true one.

There are a score or more of six-cylinder models but none of them have the fine characteristics of the Oakland Greyhound—6-60—a car of such striking lines that you gaze at it in sheer admiration and marvel at its wonderful symmetry and graceful appearance.

But we do not stop there. We are not satisfied in producing the most beautiful car in the world.

We give you beauty you cannot see—beauty you cannot feel—we give you beauty of construction for the Oakland is as true inside mechanically as it is true outside artistically.

We give you a car that is mechanically right, for Oakland construction stands for maximum mechanical efficiency.

We give you unit power construction—the motor, clutch and transmission on one line, because this method gives you increased power, the minimum of friction and straight line drive.

We give you maximum accessibility, which you must have in order to give the car proper attention after you own it and drive it.

We give you a double drop frame because this construction gives the car a low center of gravity, keeping the machine on the road better. It makes the car safer to handle at high rates of speed and improves the riding qualities generally. The side swaying of the body is reduced to the minimum because the car "hugs the ground," and the danger of skidding is almost done away with.

We give you aluminum steps instead of wooden running boards, because this construction eliminates the use of a number of thin metal parts subject to noise. Have Oakland salesmen enumerate the many advantages incorporated.

In the matter of detail, comfort and convenience, the Oakland is modern, for there has been incorporated the best of the scientific progress made to date in automobile construction.

The Oakland is equipped with an efficient electric lighting system and a positive self starter. Gasoline tank is carried at the rear, making it very convenient for filling. There is a gasoline gauge on the tank.

There is an oil sight feed on the dash. The starter valve is on the dash. Everything is in a convenient position for use.

And now comes the squarest sentence ever printed in an automobile advertisement: Make all the comparisons you want, and if you do not think the Oakland the most beautiful car in the world, and the equal, mechanically, of any car made, you need not buy it.

THE GREYHOUND 6-60—the new Oakland Six-Cylinder Chassis has a wheelbase of 130 inches, double drop frame, unit power plant, cone clutch, sliding gear transmission, full floating rear axle, demountable rims, German silver radiator "V" shaped, 10-inch upholstering, full nickel trimmings and equipped with electric lighting and ignition system and a self starter. There will be mounted on this chassis, four, five and seven passenger bodies, and a raceabout for two. Price of all models $2400.00. Model 45 seven passenger Limousine; wheelbase 120 inches, unit power plant, selective sliding gear transmission, cone clutch, Bosch magneto. $3000.00.

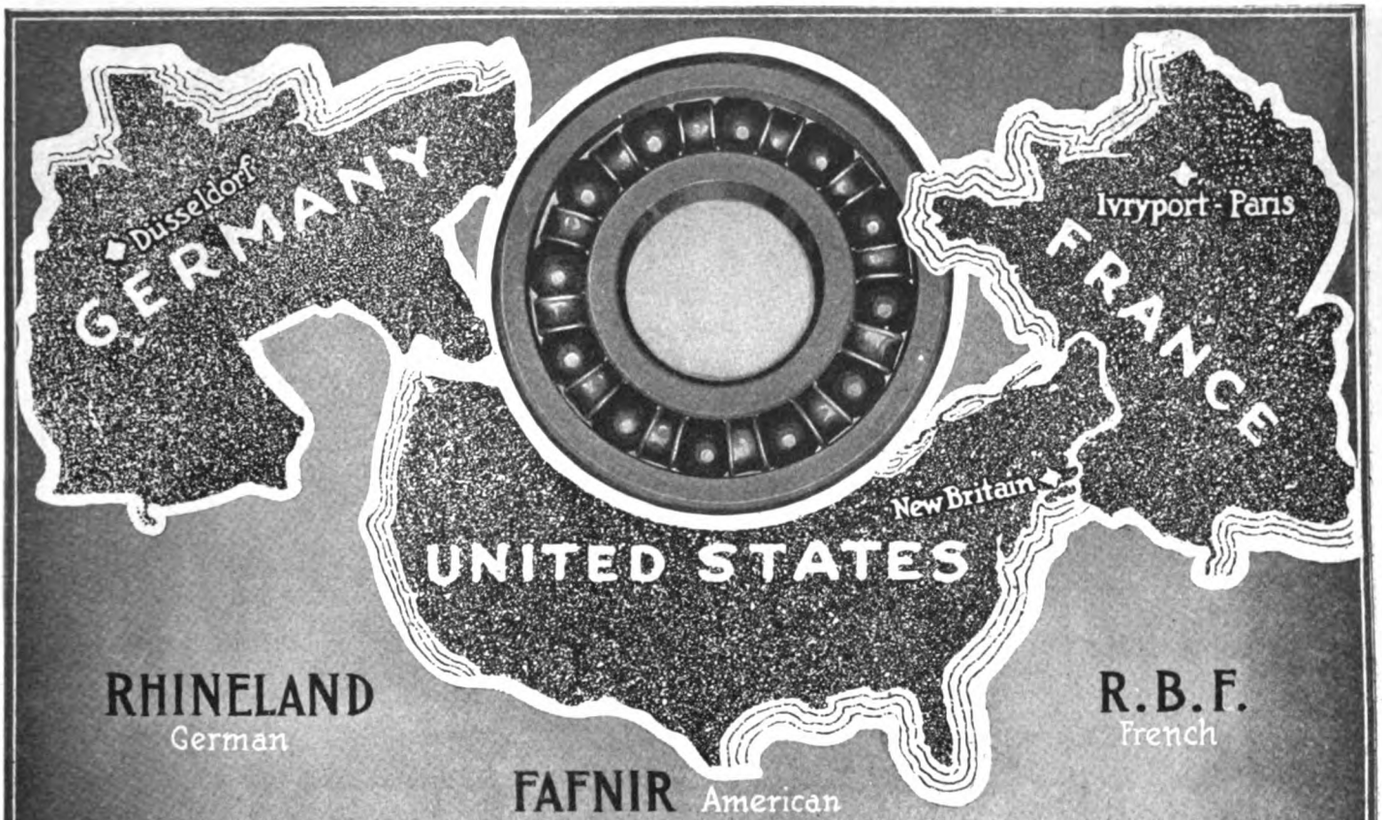
MODEL 42 CHASSIS, 116-inch wheelbase, double drop frame, unit power plant, cone clutch, sliding gear transmission, full floating rear axle, demountable rims, German silver radiator "V" shaped, 10-inch upholstering, full nickel trimmings, and equipped with electric lighting and ignition system, and a self starter. There will be mounted on this chassis a five-passenger body and the famous Sociable Roadster (three-passenger single seat). Price of all models $1600.00. There will also be built a smart four-passenger coupe on this chassis to sell at $2500.00.

MODEL 40 CHASSIS, five-passenger touring car; 114-inch wheelbase, single drop frame, unit power plant, selective sliding gear transmission, cone clutch, demountable rims, full nickel trimmings, and equipped with a self starter, at $1450.00.

MODEL 35 CHASSIS, five-passenger touring car, wheelbase 112 inches, motor 3½ x 5 unit power plant, "V" shaped, vertical tube radiator, 32 x 3½ tires, demountable rims, gasoline capacity 15 gallons, Remy ignition, electric lights, with storage battery, nickel trimmings, $1075.00. We are also building on this chassis a three-passenger Sociable Roadster, at $1000.00.

OAKLAND MOTOR CAR COMPANY, Pontiac, Michigan

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RHINELAND German

R.B.F. French

FAFNIR American

Insurance *for* Builder & User
Universal Use & Reputation

Strikes, Fire, Flood or War Cannot Stop Deliveries

Strikes, Fire, Flood or War Cannot Stop Deliveries

A Few Users of These Bearings

Peugeot	Cadillac	Alden-Sampson
Panhard & Levassor	Mercer	American
Delahaye	Peerless	Daimler Co., Coventry
Delaunay-Belleville	KisselKar	Usines Pipe
Renault	Lauth-Juergens	Gebrüder Stoewer
Etablis Hotchkiss	Seagrave	Adlerwerke
Auto-Metallurgique	Michigan Buggy Co.	Cie. d'Auto Fiacres
Schneider	Pullman	Nagant Freres
Isotta Fraschini	National	Calthorpe
Clement-Bayard	Stoddard-Dayton	Minerva Motors

RHINELAND MACHINE WORKS CO.

140 West 42nd Street, New York

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The Right Foundation for a Motor Truck

Axles—front and rear—form the foundation on which the whole superstructure of the truck depends.

A motor truck is a commercial car and therefore must be dependable.

Dependable axles are fundamentally necessary to the dependable motor truck.

TIMKEN-DETROIT
AXLE EQUIPMENT FOR TRUCKS

In Timken-Detroit design every factor of motor-trucking service is considered—by engineers who have specialized on truck equipment since the days of the first commercial car.

By engineers whose experience covers every phase of truck axle equipment in every kind of a commercial vehicle from light delivery wagon to ten-ton truck.

By men who know what the engineers of a large number of truck builders (Timken-Detroit customers) have discovered in the actual use, first of other equipments, then of Timken Equipment, under every possible condition of truck service.

By engineers who study foreign practice as well as that of our own country.

Built Right, Too

Timken-Detroit Commercial Axle Equipment is built by an efficient organization of men who are specialists in axle production. By men who know every kink in axle manufacture from long experience and study—experience and study that goes back of the automobile age to the horse age.

Men whose heart is in the work—whose sole ideal is building the best possible axles.

Are Standing the Test of Use

Timken ability in designing and integrity in manufacturing commercial truck axle equipment are demonstrated by efficient service under the trucks of an overwhelming majority of the leading truck builders of the country.

The list of truck builders using Timken-Detroit equipment is an unanswerable argument for their quality and serviceability.

Write for a copy of the list—Bulletin 49

The Timken-Detroit Axle Company

Detroit, Michigan, U. S. A.

The only axle manufacturer licensed to make axles equipped with the famous Timken Roller Bearings

18

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ALL FOUR IN THE SAME CAR

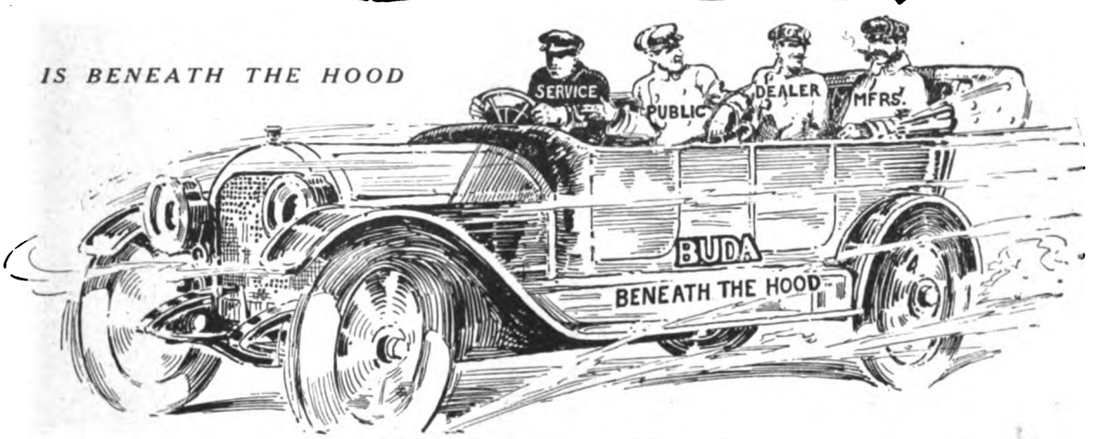
YOU ***MANUFACTURERS*** WHO WANT TO TRAVEL THE ROAD OF ***SALES*** WISELY CLIMB INTO THE SAME CAR WITH THE ALERT ***DEALER.***

YOU ***DEALERS*** WHO WISH TO REACH THE PLACE CALLED ***PROFITS*** ALWAYS INVITE YOURSELF INTO THE SAME CAR WITH THE ***OWNER.***

YOU ***OWNERS*** WHO WANT ECONOMICAL AND ENJOYABLE MOTORING CHOOSE THE CAR WHICH HAS ***SERVICE*** AT THE WHEEL—AND ***SERVICE*** IS ALWAYS AT THE WHEEL WHEN

BUDA MOTOR

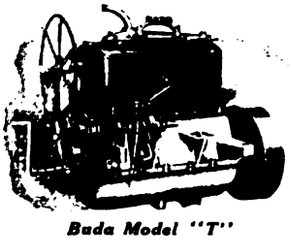
IS BENEATH THE HOOD



The reason a number of the *MOST PROMINENT, MOST SUCCESSFUL AND MOST ALERT AUTOMOBILE MANUFACTURERS* are *SPECIFYING THE BUDA MOTOR* for their cars

—is simply because the ***dealers*** have begun to specify the BUDA in their orders.
—which is simply because ***the public*** is gradually beginning to ***insist*** on the BUDA.
—which is simply because the Public finds ***Service*** in the BUDA—with
—its demonstrated efficiency in thousands of cars now in daily use
—its Special Oiling device
—its superior "get-at-ableness"
—and the satisfaction in knowing that in case of accidents, ***interchangeable parts*** can ***ALWAYS be secured*** from a company which is so well financed and which has been conducting a successful business for 25 years.

It was the Buda which was the Pioneer in the "Cast-in-Block" method in the U. S.



Buda Model "T"

Send in coupon stating whether you are interested in a pleasure or a commercial car and we will send you a *special bulletin* describing the suitable motor.

1913 Specifications

Model "T" Motor. 4¼x5½ Model "Q" Motor, 3¾x5½
Model "O" Motor, 4⅛x5½ Model "M" Motor, 3¼x4½

Long stroke. Enclosed valves. Noiseless timing gears. Self-contained positive oiling system. Extra large valves and bearings.

BRANDENBURG & COMPANY

1108 So. MICHIGAN AVE. CHICAGO, ILL.
57TH AND BROADWAY NEW YORK, N. Y.
FORD BLDG. DETROIT, MICH.

I AM THE COUPON—CUT ME OFF HERE AND SEND ME ON MY WAY!

COUPON

Brandenburg & Co.

Gentlemen:—
I am interested in learning more concerning the BUDA Motor for a Commercial or Pleasure Car.

☐ ☐

Name.....

.....

Address.....

.....

I am interested because I am a

Mnfctr.....Dealer.....Owner.....

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Mr. Automobilist:

Your tire maker is very anxious to impress upon you the importance of

Tires Inflated to the Right Pressure

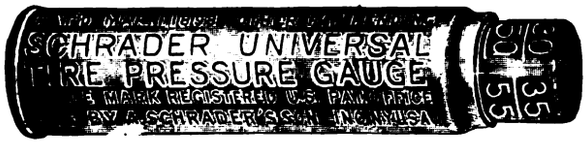
He insists that this is tire economy and

Saves You Money

How do you know what pressure you have in your tires? A

SCHRADER
UNIVERSAL
Tire Pressure Gauge

(Trade Mark Registered in U. S. Patent Office)



(Patented March, 1898—Other Patents Pending)

will tell the exact pressure in your tires at any time, day or night, by simply holding this Gauge to your Valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the Gauge can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the Indicating Sleeve can be pushed back into the Gauge with your finger. No catches or snaps to operate or get out of order. This Gauge is 2½ inches long over all, short enough to apply easily to the smallest diameter of wheel and can easily be carried in the vest pocket or the change pocket of your trousers.

Price $1.00 Each
Ready for Delivery Now

Guaranteed Simple and Absolutely Accurate

Can be obtained from all tire manufacturers and the dealers, or

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"EXTRA SERVICE"
TIRES



Extra service means more mileage to the tire user—

It pays to investigate the tire question—especially when there is such a vast advantage in learning the *extra* mileage—the added service—that Federal Tires deliver on any car.

The guarantee on Federal Tires is withdrawn when tires are filled with any substitute for air.

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BOSCH Spark Plugs have been used by the winning cars in the greatest American races of the year; their practically exclusive use by the greatest racing drivers is the most positive guarantee of their true worth, for racing surely does test a spark plug.

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The Largest Automobile Supply House in America

15—STORES—15

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The Greatest Gas Economizer and the Longest Lived Burner made.

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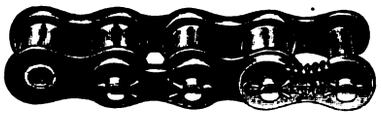
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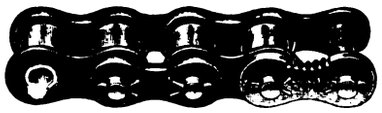
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Because the "Whitney" Cotter Detachable Chain can be easily separated at any link and lengthened, shortened, or repaired without the use of any special tool. This is of great advantage to truck builders, owners and drivers.

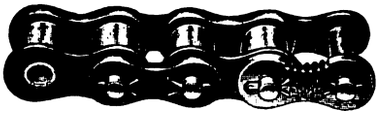
"Whitney" Chains are used by the leaders because they are strong, accurate, dependable and above all long lived. They are made right and they're made from the right kind of material, thus giving highest efficiency. When making replacements insist on a "Whitney" and get acquainted with its merits.

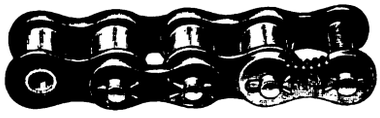
"Whitney" Chains Are Built for Strains

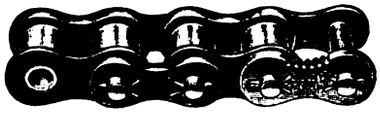


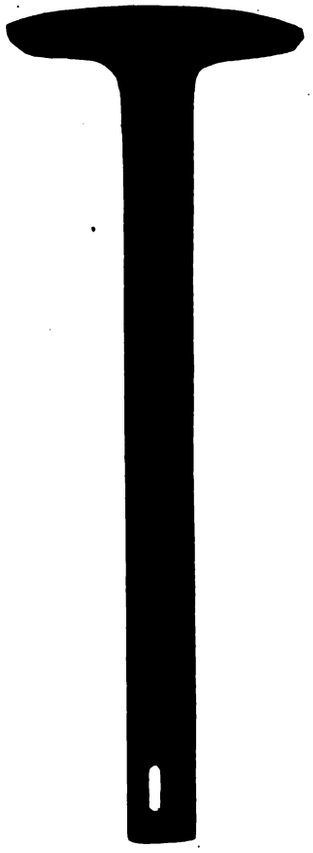


THE WHITNEY MFG. CO., Hartford, Conn.









THINK THIS OVER

very carefully and read it twice, if necessary.

Is there any part of an automobile engine, or any other gas engine, that is more important to its efficiency than a Valve?

Your engine leaves the factory running smoothly and sweetly—tuned up to its highest power. Perhaps the valves pit—warp—go out of shape—fail to hold compression. Then the power diminishes, and what can be more aggravating to the driver, who has known the fullness of the pulling power of his motor, than to have it grow less and less?

You cannot slight this part by putting in an inferior product—valves that will give trouble, or even break from inexperience in their manufacture—valves of unsuitable material, not suitably heat treated.

Too much is at stake, and a slight extra cost at the outset, which is the exception, may save you many times over a probable later expense.

This Company, with the experience of many years as a guarantee, will furnish you with properly made valves, of the materials best adapted to your requirements.

Not only QUALITY, but efficient SERVICE is a factor—surely there is a satisfaction in getting the kind of work you want—when you want it.

THE ELECTRIC WELDING PRODUCTS COMPANY

CLEVELAND, OHIO

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GET A 1912 TWITCHELL Positive Lock Stop AIR GAUGE

With it you can get more mileage out of the Tires, because you can always keep them at right pressure.

The Twitchell Gauge is Tire Insurance for a dollar—Order one from your dealer or from us direct.

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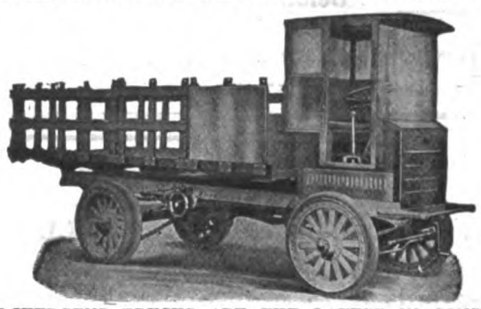
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NEWARK, N. J.—Merchants Motor Car Co., Essex Building.
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Advanced Manufacturing Processes
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are three of the four reasons why New Departure ball bearings will be used more than any other in American made cars sold in 1913.

THE FOURTH REASON:

Shipments when you want them—eight acres of machinery busy twenty-two hours a day.

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Model K2
Price $75

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Handsome catalogue on request.

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IT will cost you practically no more than what you will be forced to pay out for constant repairs on your present ignition system. A new Remy will give your car new life. Here is our exchange proposition:

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In All the World No Car Like This

Ten successful seasons—the wonderful long stroke motor—added improvements and refinements give this wonderful car the greatest value ever offered for $1800. Read the list below of the most notable features of the

Dreadnought Moline M-40

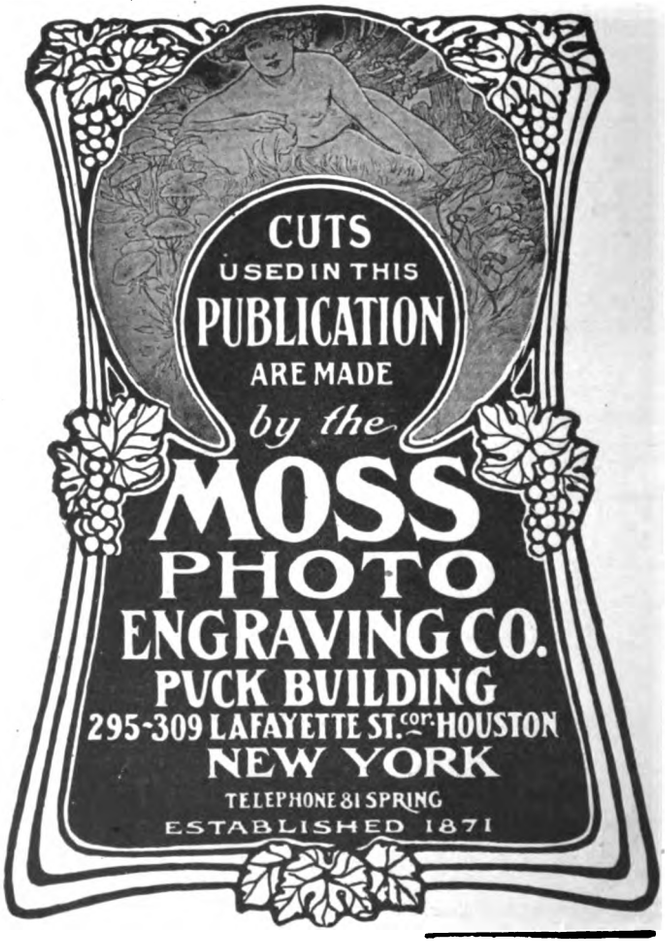
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OWNERS AND DEALERS—Write for the most interesting catalog ever written.

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Dreadnought Moline

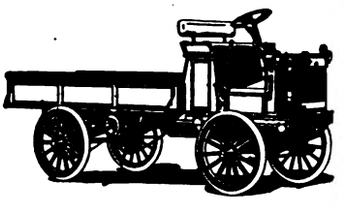


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Chassis with Driver's Seat and Dash $1660



Stake or Express Body $1750

A one ton truck built by specialists in one ton trucks—4 cylinder, 30 h.p., water cooled unit power plant, 3 point suspension, with clutch and fly wheel enclosed in oil tight aluminum housing, 4 speed selective type transmission, heavy axle and spring suspension.

Sanford Trucks are remarkably accessible in every part, in every assembly and in the entire assembly. A motor truck to be permanently popular must be lastingly good. Sanford Trucks are built lastingly good, and are therefore permanently popular.

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The noticeable features of this type of BENZ cars include the offset crank shaft, smokeless oiler, and SILENT CHAINS instead of timing gears.

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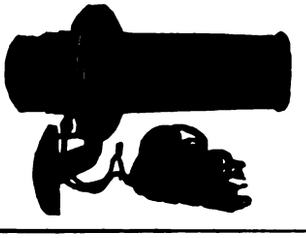
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We could build them cheaper
But We Won't.
We would build them better
But We Can't.

THE DIAMOND RUBBER CO. OF N. Y., Akron, O.
Subsidiary of The B. F. Goodrich Co.

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Are the right Warning Signals for every occasion.
"Newtone" makers guarantee satisfaction



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The One Mechanical, Never Failing Warning Device

Costs Little to Buy—Costs Nothing to Operate

No Battery—No Wire—No Bulb—No Motor to break down or fail to work.

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Any Kind Every Kind Stock, or to Blue Print **Rims** Clincher Q. D. Demountable Channels

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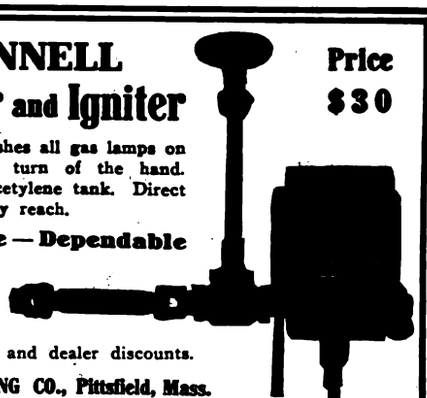
We Also Make Axles and Hubs.

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THE GRINNELL Gas Controller and Igniter

Price $30



Lights, dims and extinguishes all gas lamps on the car through a simple turn of the hand. Coupled to valve-stem of acetylene tank. Direct control. Always within easy reach.

Convenient—Safe—Dependable

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This name stands for efficiency in SPARK PLUGS

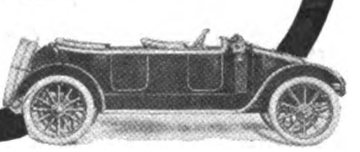
Used as standard equipment by eighty-eight manufacturers.

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Croxton

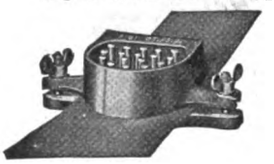
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You can repair CASINGS and INNER TUBES anywhere in 15 minutes, better than a Repair Shop can do—and for *one cent.*

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Patented

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Price Complete, $4.00 Ready for Instant Use

Guaranteed Satisfactory or Money Refunded

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Great Dealer Proposition for those who want to handle a device that will increase engine efficiency, save fuel and keep the engine clean. Retails for $3. Big commission. Write, today.

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Standard Universal Rims



fit any style or make of tires. The side rings are reversible, they curve outward on one side to fit a straight side tire, inward on the other to accommodate a clincher. Two turns of a nut unlocks the rim for demounting, two more turns locks the rim in place. Write for catalog 607, which explains fully.



THE UNITED RIM COMPANY, Akron, Ohio

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(KNIGHT TYPE MOTOR)

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HAVERS "Six-44" $1850

Touring Car and Roadster Types. 44 h.p. 6 Cylinders. Unit Power Plant, 3-Point Suspension. 122 in. Wheel-Base. 36 x 4 Tires.

HAVERS SIX M

HAVERS "Six-55" $2250

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Write for full specifications

HAVERS MOTOR CAR COMPANY, Port Huron, Mich.

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Three New Models—All Fully Equipped

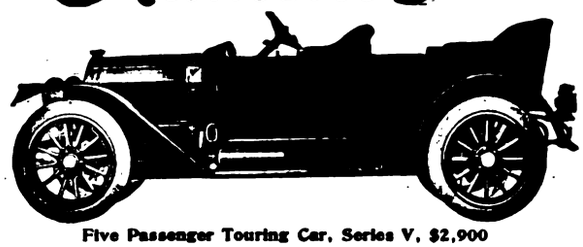
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$1,675	$2,150	$2,750

We are building 500 extra PULLMANS for 1913—1500 in all. Our present dealers have spoken for 1000 and the increase is for new territory—possibly yours is open. Our SALES MAKING ORGANIZATION helps the agent—let us tell you how.

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Stock Champion — International Champion

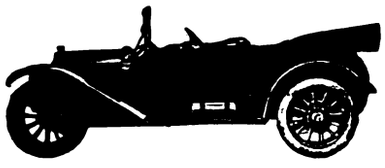
National 40



Five Passenger Touring Car, Series V, $2,900

NATIONAL MOTOR VEHICLE COMPANY
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Type 35 Series A and B Newport



$2,750 Fully Equipped

MERCER

THE CHAMPION LIGHT CAR

The Mercer's great victory in the Vanderbilt Cup Race demonstrated conclusively that weight and bulk are no longer essential.

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"The Easiest Riding Car In The World"

The Marmon "32"

32-40 H.P., 120-inch wheelbase, self starting, dynamo lighting, with body types to meet every requirement and corresponding equipment —$2,850 to $4,100

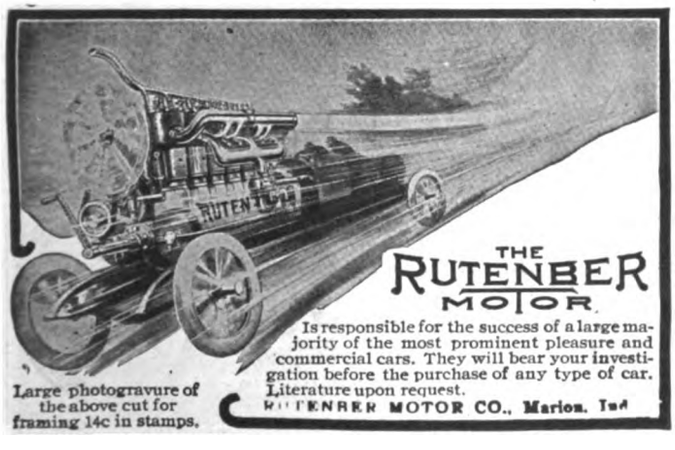
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INDIANAPOLIS (Est. 1851) INDIANA

Sixty Years of Successful Manufacturing



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RUTENBER MOTOR CO., Marion, Ind.

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New Series "F," 4 Cylinders, 4 and 5 Passenger Models..... $2700

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All models electrically lighted and fully equipped.

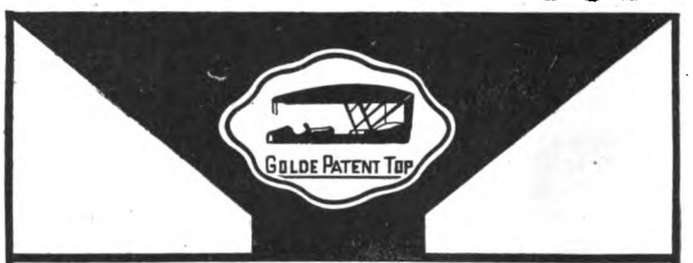
SPEEDWELL MOTOR CAR COMPANY
50 Essex Avenue DAYTON, O.

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SPARK PLUGS
Ignition Absolutely Sure
RAJAH AUTO SUPPLY CO. BLOOMFIELD, N.J.
Also Makers of RAJAH TERMINALS- the Best Made

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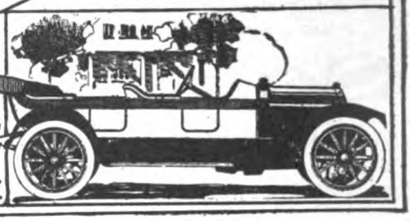
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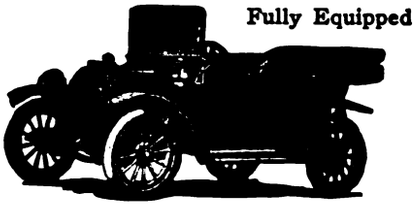
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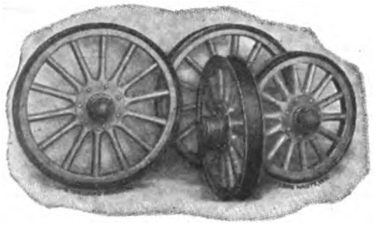
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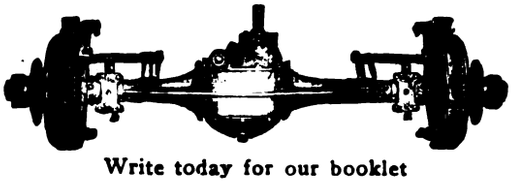
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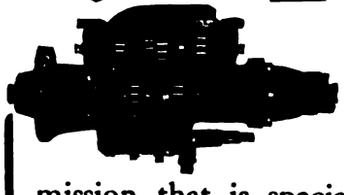
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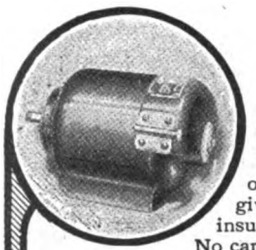


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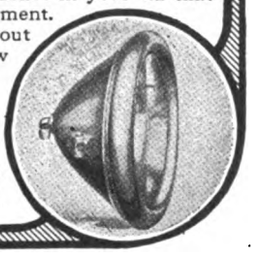


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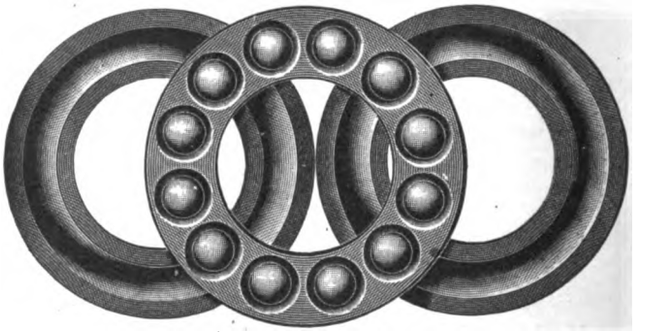
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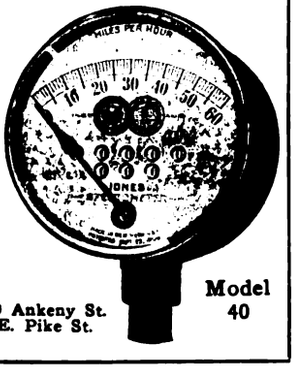
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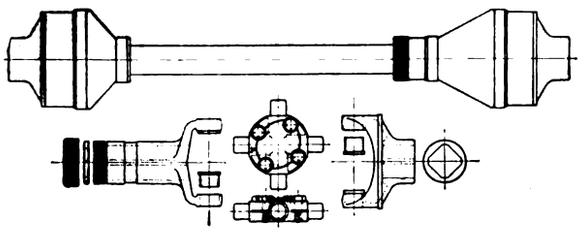


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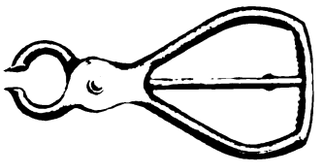
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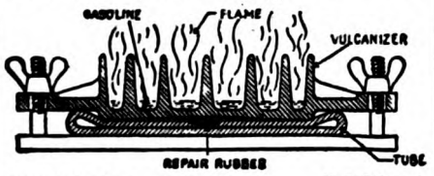


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FOR SALE—Palmer-Singer 6-60 motor and transmission complete, in good condition. DR. FRYER, Riverside, Wash.

DO you wish to better your position? If your character and ability will stand investigation we can place you in any occupation, anywhere. Enclose 50c. for registration with references. Fee returned if unsuccessful. Address DEPT. F, BLUE LIST EMPLOYMENT EXCH., 250 West 87th St., New York City.

MAGNETOS
Bosch DU-4 Magnetos, Type 5 or Duplex $25.00
Splitdorf Magnetos, with coils..... 20.00
These are standard goods and only have 100 left. Send your check before they are gone.
AUTOPARTS MFG. CO.,
Detroit, Mich.

ATTENTION—Have a few manufacturers' samples, gentlemen's black broadcloth fur lined overcoats, lined throughout with Australian mink, large genuine Persian lamb collars, sizes 36 to 48. Value $75, will sacrifice for $35 each. Also several ladies' handsome long fur coats, satin lined, worth $90, while they last, $35; and few large size fur robes, plush lined, $15 each. All guaranteed new. Examine before buying. Send express charges, will send on approval. Write or call. E. ROBERTS, Room 8, 160 West 119th St., New York.

PEERLESS LINING DYE
Dyes the cloth linings of tops and curtains a black, uniform color, covering up water stains and grease spots. Does not wash off. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

SALESMEN, one who is now visiting automobile trade or owners. Good money made on a very attractive proposition. STURDY MFG. CO., 2637 Michigan Ave., Chicago, Ill.



An ad. like this will cost you 60c. for each insertion.

Mr. Dealer:

8,000 readers means people primarily interested, otherwise they would not be subscribers. Make them your customers or eager to secure your patronage by

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

AGENTS WANTED — To handle the $1000 G. J. G. "Junior," racy, classy and specially designed chaseabout with 104-inch wheelbase, with a real 26 H.P. motor, Bosch magneto, Dorian remountable rims with 32 x 3½ tires, at a price of $1,000, which is a money maker for the sales agent. Write for literature and discounts to G. J. G. MOTOR CAR COMPANY, White Plains, N. Y.

APPERSON, 1907, 40 H. P., four seats; makes 60 miles per hour; everything new; bargain for ready buyer. A. C. HEWITSON, 101 West 66th St., Room 4, New York City.

SCORED CYLINDERS repaired, $12. No enlargement of bore—no need for new pistons and rings. Send piston with cylinder. Absolutely reliable method. References, testimonials, and full details on request. WATERBURY WELDING CO., Waterbury, Conn.

AUTOMOBILE BODIES, pleasure and commercial. Foredoors for open-front cars. Write for prices. AUTO SPECIALTY MFG. CO., 326 E. Market St., Indianapolis, Ind.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

AUTOMOBILES—A. C. C. A. Prices Talk! Every make. Every model. Hundreds runabouts, racy roadsters, five-seven passenger touring cars. $50 up. Guaranteed five years. Shipped Freight Prepaid! Write today for the largest Illustrated Catalog published! THE AUTOMOBILE AND CYCLE COMPANY OF AMERICA, Dept. I-N, 1769-1787 Broadway, New York City.

WANTED—Foreman large repair shop. Applicant must have had wide experience in handling men and able to get out work properly and on time promised. Should be familiar with E-M-F cars. Good salary and permanent employment to able man. Address, stating experience, number of men handled and salary expected, BOX 226, care Motor World.

AUTOMOBILE AT SACRIFICE—1 model 17, 1911, 5-passenger Buick, $725; A-1 condition. F. MARION SHEEN, 521 Clouet St., New Orleans, La.

FOR SALE—Four cylinder, 55 H.P. Foreign F. I. A. T., double chain drive, racytype roadster, nearly new, price $2,500. C. L. WHITING, 591 E. Main St., Rochester, N. Y.

MAILING LISTS—Automobile owners, dealers, garages, repair shops, commercial car owners, or any make of car. OWNERS AUTO LIST CO., Albany, N. Y.

PEERLESS EXTRA FINE BLACK BAKING JAPAN

Bakes either to a high gloss finish, eggshell gloss or dull finish on lamps, radiators and fenders. Will not crack, chip or peel. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

FOR SALE—One 16-passenger Sight Seeing Car. Address J. C. BRICK, Put-In-Bay, Ohio.

WHITE STEAMER, seven-passenger, model M, straight line body, 40 H.P.; absolutely perfect; complete equipment; $700. H. SNYDER, 112 West 38th St., New York. Telephone 4060 Greeley.

WANTED—Packard 18; state price, year built and number of miles run. P. O. BOX 161, Niantic, Conn.

AUTOMOBILE Cylinders reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

RADIATORS.

Ford T Radiator	$18.50
Ford N-R-S Radiator (with pump)	23.00
Buick 10 Radiator	26.50
Buick 16-17 Radiator	32.50
Buick 19 Radiator	27.50
Hupp Radiator	25.00

AUTOPARTS MFG. CO., Detroit, Mich.

NEW CHEESE CLOTH REMNANTS, best polishing material, sold by the pound. Saves 40% of store prices. Price 38c. per pound in 50-lb. and 100-lb. bales. Agents wanted everywhere. AMERICAN MILL ENDS CO., Detroit, Mich.

FOR SALE—Caldwell Gasolene Lawn Mower; specification—4 cyl. vertical motor, dry batteries and Bosch magneto, Schebler carburetor, width of cut 40 in., weight 2,000 lbs. For complete description and price address INDIANAPOLIS MOTOR SPEEDWAY, Indianapolis, Ind.

PEERLESS BACK AND CUSHION DRESSING

Softens the leather and will not crack, wash or rub off. Makes old leather look like new. Dries in twenty minutes. Ask your garage or supply dealer.
The Columbus Varnish Co., Columbus, O.

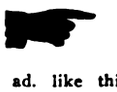
ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

CHAUFFEUR'S COMPLETE OUTFIT SACRIFICED—Consisting of elegant mink fur lined coat, Persian lamb collar, $35; pair of elegant bear robes, $15 each; raccoon cap, $5; pair of fur gloves, $4; pair or goggles, 50c.; 1 pair leather leggins, $3.50. Will sell separately or the lot, all new, never worn, original price, $225. C. CHASE, 118 East 28th St., New York.

WANTED—To exchange my 160 acre improved farm, with crop, in northwestern Oklahoma, for five-passenger touring car. CARL GRAU, Taylor, Tex.

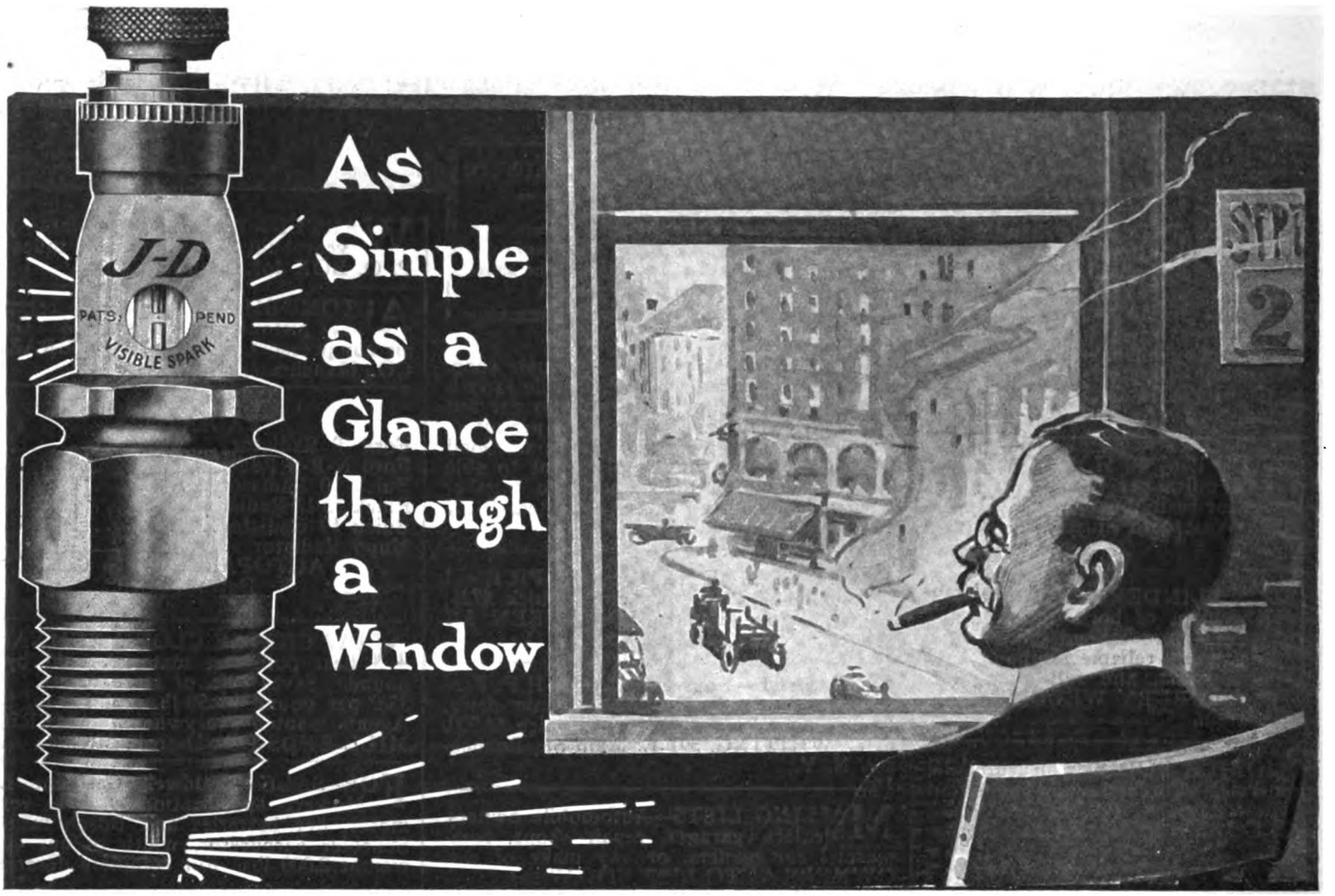
FOR SALE—One 2-ton Garford truck, with body and top, nearly new, in first class condition. Change of business reason for selling. SPRINGFIELD CREAMERY, Springfield, Mass.

telling them what you have to sell or want to buy. We guarantee a circulation of 8,000, so the actual cost of having your announcement appear before this audience is less than one-fourth of a cent per reader (see the hands in the margin). Think this over.



An ad. like this will cost you $1.35 for each insertion.

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JEFFERY-DEWITT CO.
DETROIT, MICH.

VISIBLE GAP SPARK PLUG
TELLS ITS OWN STORY

Through the window in the porcelain of the plug—**outside** the motor—you can instantly tell if the plug is firing correctly. You can see the spark jump the gap in the central electrode at any time—the darkest night shows it up clearest.

It Simplifies the Trouble Hunt by Half

If there is a spark in the window, but proper ignition fails, you know the points are fouled. In that case, just turn the knurled micrometer nut at the top of the plug with the fingers and separate the visible points still more. This increases the intensity of the spark, breaks down all oil or carbon deposits between the points and automatically cleans them in a jiffy.

And if there is no spark in the window, you know you must look to coil, batteries or magneto for your trouble.

You Don't Have to Take the J. D. Plug Out of the Motor

By this micrometer nut you can adjust each plug so as to give maximum sparking efficiency.

One Glance Through the Window Tells All

You need a set of these plugs in your motor. Send for a set now, enclosing price and size wanted (**or tell make of car**), and we will forward them at once, prepaid. Our rigid guarantee of positive satisfaction or your money back goes with every plug.

You Are the Judge in This Trial

We make millions of spark plugs a year—that's our only business. We import the clays for our heat-defying porcelain, and use the best material on the market.

Yet the Price of the J. D. Visible Gap Spark Plug Is Only $1.00

Perhaps you would like our free book on Ignition. It contains a mine of useful information. A card brings it.

JEFFERY-DEWITT CO.

565 Butler Avenue *Largest Manufacturers of Spark Plugs in the World* **DETROIT MICHIGAN**

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DEALERS

Be Sure Your Cars Are

EQUIPPED

With

R·I·V Ball Bearings



Quality

DEALERS

Bearings of Recognized Worth are Ear Marks of Car Quality

DEALERS

Are the Cars You Represent R.I.V. Equipped?

Ball Bearings, in general, must measure up to certain fixed standards of strength and accuracy. That's admitted, but there is wide range of difference between the ultra good bearings and the one in which Quality is sacrificed for unwarranted profit.

R.I.V. Ball Bearings incorporate out-of-ordinary refinements of design and especially "compounded" steel—both uniting to give frictionless, noiseless wear, no matter how trying the strain or how long the service.

Car manufacturers who aim to supply the greatest degree of service and efficiency use R.I.V. Bearings.

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EISEMANN

¶ In the type E-M Eisemann high tension dual ignition system, particular attention has been paid to accessibility and to making it as nearly fool-proof as possible.

¶ A separate contact breaker is used for the battery as well as for the magneto. The breaker box is of the most advanced type. All vulnerable parts are applied individually for each circuit. In other words, only such parts are used in common with the battery and magneto as are not subject to accident and wear.

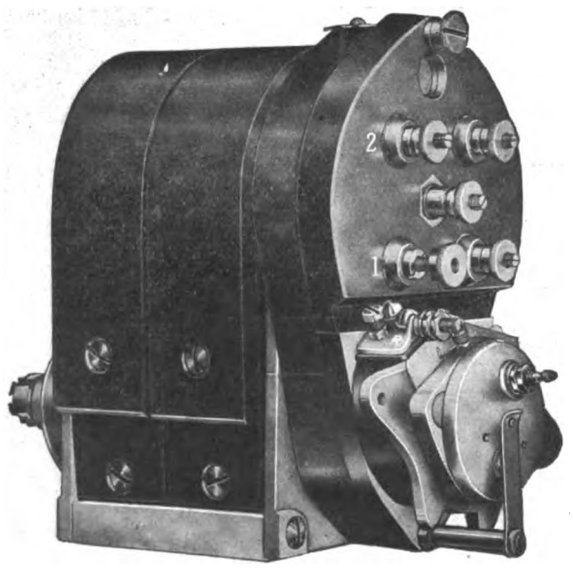
¶ The type E-M Eisemann magneto may be entirely looked over in a minute's time and both breakers may be inspected while the magneto is in operation.

THE EISEMANN MAGNETO CO.

Sales and General Office:
225-227 West 57th Street, New York City

INDIANAPOLIS
514 North Capitol Avenue

DETROIT
6 Goldberg Building



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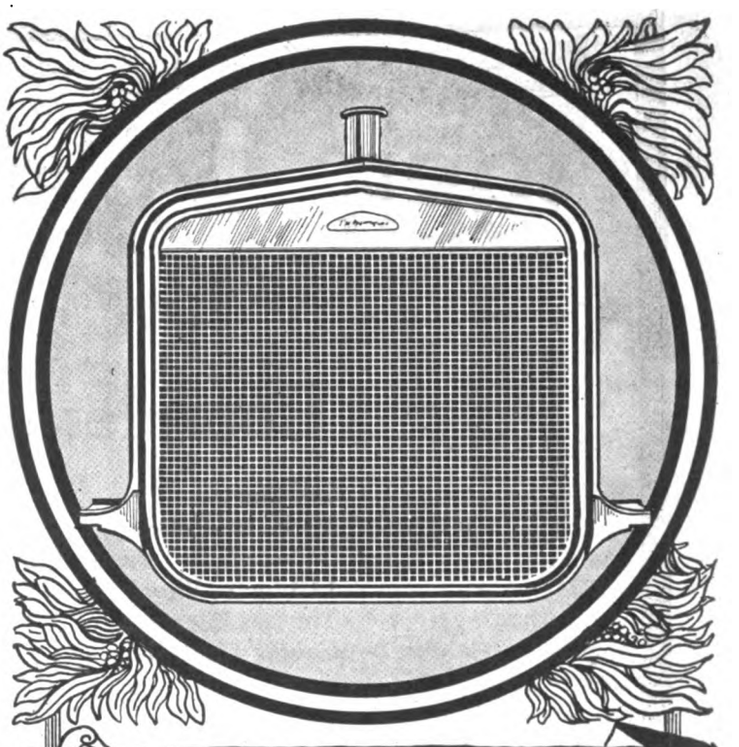
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FEDDERS
Automobile Radiators

FEDDERS Square Tube Radiators mean that the manufacturers using them are giving the greatest radiator efficiency to their customers.

¶ Viewed from any angle Fedders Square Tube Radiators with all four sides surrounded by water represent the greatest value to the car owner.

Wont you let us tell you why, in detail?

Fedders Manufacturing Works
BUFFALO, NEW YORK

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$985 Overland $985

Completely Equipped

Self-Starter
30 Horse-Power
5-Passenger Touring Car
110-Inch Wheel Base
Timken Bearings
Center Control
Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision Wind Shield
Prestolite Tank

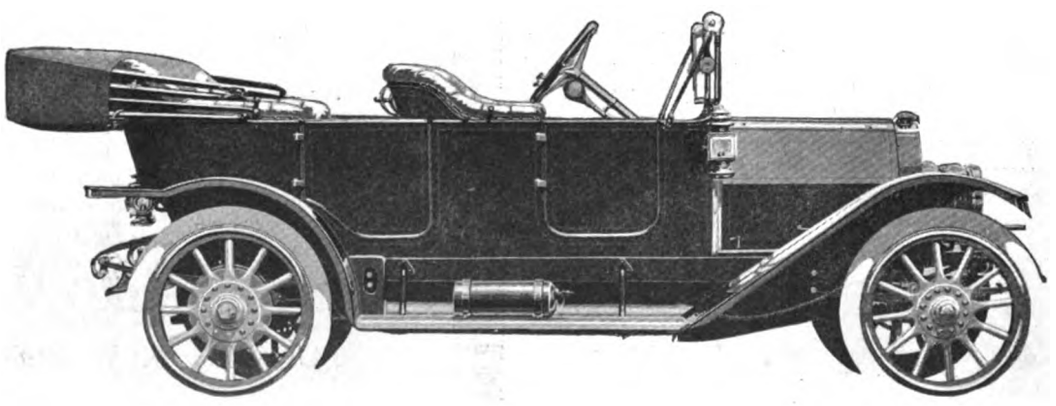
High-priced feature No. 2

When an auto wheel hits a rut the frame must bend. Most popular priced makers try to hold the motor and transmission rigid by a *number* of arms. Overland motors are suspended at but three points. This method absolutely prevents disalignment. Otherwise, crank or gear cases bend and throw the engine bearings out. Disalignment prevents proper lubrication. It works general havoc with motor and transmission.

Experiment for yourself with three and four legged stools.

This is just one of the high priced features in the Overland at $985. A catalogue for the asking tells you of the many others. Please address Dept. 50.

The Willys-Overland Company
Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, November 7, 1912 No. 7

WILL RENT CARBURETTERS INSTEAD OF SELLING THEM

Triple Action Company's Unusual Arrangement Built Around Gasolene Saving Effected—Fees Up to $100 a Month.

Renting carburetters, not selling them outright, is the rather remarkable business of the Triple Action Carburetter Co., of New York City, which recently was incorporated under New York laws with authorized capital of $200,000, which, according to the letterhead of the company, is "fully paid in." Mathias Weiwoda is president and general manager of the company "for the American Continent, England, Germany and France," and Frederick Hodschar is secretary-treasurer.

The company is located on the third floor of an unpretentious loft building at 718-722 East 11th street, but for some reason or other it will give no information concerning the internal construction of its carburetter. It is willing, though, that it be known that the device has "no needle valve or easy obstructed spray hole" and that it uses only a dry gas. It is not backward, however, in stating that the T. A. C. carburetter uses from 50 to 100 per cent. less gasolene than "any other carburetter in the world."

The quarters of the company are not large, which is not true of the rental fees which it exacts. Originally, it fixed a monthly rental fee equal to 50 per cent. of the quantity of gasolene saved by the use of its carburetter, the minimum fees being $25 per month for carburetters with 1¼-inch outlets, $50 for carburetters with 1½-inch to 2-inch outlets and $100 per month for 2½-inch to 3-inch outlets. On second thought, however, these figures were made arbitrary.

The rental fees are sufficiently large to make the manufacturers of carburetters who sell their productions outright wrinkle their brows. For its purpose, the Triple Action Carburetter Co. employs a rental contract which is very similar to those used by manufacturers of taximeters. It gives them the right to enter the lessee's premises at any time to make tests or for the purpose of removing the carburetter, and to do other similar things.

Cincinnatians Enter Toledo Company.

Dr. C. L. Bonifield, of Cincinnati, vice-president of the American Automobile Association, and president of the Ohio State Automobile Association, finally has entered the trade. He has been elected president of the National Cement & Rubber Co., of Toledo, O., which just has undergone reorganization. Gustave W. Drach, a Cincinnati architect, also has acquired an interest in the company, of which he has become secretary and treasurer. L. D. Finn, who has been identified with the enterprise for several years, will remain in the capacity of general manager.

Offers Discounts to Share Buyers.

The Federal Motor Supply Co., of Cincinnati, which recently was incorporated under the laws of Ohio, with an authorized capital of $250,000, is offering for public subscription its 8 per cent. cumulative preferred shares, par value $50 each. As a bonus purchasers are given one share of common stock with each three shares of preferred. They also are promised "special discounts" on all goods which they may purchase from the company.

Morgan Truck Files its Schedules.

Schedules filed by the Morgan Motor Truck Co., of Worcester, Mass., which was petitioned into bankruptcy on October 3, discloses liabilities of $76,020, of which $75,488 is unsecured. The assets are placed at $14,477, of which $203 is represented by cash on hand, $494 in bank, $1,000 in machinery and tools, $1,250 in vehicles and $4,500 in open accounts.

KENNY EVOLVES A SOLUTION OF THE USED CAR PROBLEM

He Rebuilt Cars in a Fanciful Factory, Collected Deposits and Then Disappeared—Short Campaign That Paid Handsomely.

Solving the used car problem may appear difficult, but at least one man has solved it to his satisfaction and in a manner that netted him a clean profit of $8,000 or $10,000 in seven weeks. He is, or pretended to be, Edward S. Kenny, and until October 25 last he did business as the Automobile Sales Agency in the Astor Theater Building, 1531 Broadway, New York City. Kenny's own story of how he solved the problem is not narrated, because Motor World has not been able to find him. The same may be said for the Post Office authorities and a host of people who unknowingly helped Kenny's "solution."

Six feet in height, bland and persuasive, he claimed to have been a baseball player a score of years ago and to have hailed originally from the West; rumor also has it that this same commodious section of the United States is his present abiding place. However that may be, he rented an office in the Astor Theater Building about two months ago and prepared to do business as a used car trader. Two stenographers were employed at first, but the flood of mail from the rural West soon necessitated the addition of a third girl. Kenny printed letter heads using the telephone number of the firm next door, despite protests against this course of procedure.

He claimed to have a car-rebuilding plant in Pontiac, Mich., and is said to have advertised extensively in newspapers throughout the West that he had rebuilt cars to sell, that these cars were in first-class condition and, although not the most up-to-date models, they would give excellent service; also he offered choice of colors and

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trimmings, but one condition is said to have been that the purchaser make a deposit of one-third the total price. Deposits and letters began to pour in, according to those who were in position to see, but no one has been found who ever knew of the trader selling a car or having one in his possession.

Business boomed for seven weeks. One day after this lapse of time a man who had not dealt with Kenny but who knew of his suddenly acquired big business accused the trader of being a "crook." Kenny did not deny it very emphatically, and on a Friday two weeks ago left the office, saying he was going to Rochester. He did not return, and a telegram was sent to him, but he is not known to have received it.

A week ago a Motor World man went to the office of the Automobile Sales Agency and found two of the office girls ensconced behind a big desk, not very busily engaged. To inquiries as to Kenny's whereabouts they were ignorant, and as to the personnel of the company they said he was vice-president, which, in fact, was the title that appeared on his business card.

"Who's the president?" was asked.

"That's what we'd like to know," both exclaimed at once.

They advised the Motor World man to "come back in a week," but inside the week the girls decided that sitting at home was more comfortable than sitting on hard office chairs, or sought work elsewhere. The office now is empty, except for a few pieces of furniture.

That the business had every appearance of legality and trustworthiness was indicated by Kenny's answer to a man who wired from the West for the "best cash discount." Instead of inducing a cash payment by the offer of a substantial discount, Kenny wired, "Best cash discount two per cent."

In addition to representing that he had a rebuilding factory in Pontiac, Mich., Kenny told one inquirer that the head of Montgomery Ward & Co., the Chicago mail order house, was interested in his business and stated that the unnamed president of his "company" owned a building on Michigan avenue. Outside of his office, Kenny is said to have used the alias "Connors" or "O'Connor."

Death Claims One of Cramp Family.

Samuel A. Cramp, son of William Cramp, founder of the William Cramp & Sons Ship and Engine Building Co., of Philadelphia, died at his home in that city on Sunday last, 3rd inst. He was 79 years of age. At one time president of the company, Mr. Cramp retired from active business about 15 years ago and since has been engaged largely in philanthropic work.

AMERICAN TIRE EXCELLENCE REASON FOR EXPORT GROWTH

Small Promise for an American Tire Factory Abroad, However, Says De Lisser—Influence of "Polite Graft" Far Reaching.

Horace De Lisser, chairman of the board of directors of the Ajax-Grieb Rubber Co., is one man who is not surprised at the substantial growth of American tire exports.

"Do I think that American tires are better than those made abroad?" he said, repeating a question that had been asked him when the subject was being discussed. "I don't think so; I know it!" he added positively.

As De Lisser only recently returned from a close range investigation of foreign conditions, his opinion is worth something. When he went abroad, De Lisser had in mind the establishment of one or more Ajax tire factories in Europe, and, although his visit was due largely to inducements which had been held out by several of the more prominent automobile manufacturers, he found the prevailing conditions such as to discourage endeavors along the manufacturing line.

"They sell tires very much as they sell butter and eggs," he stated, "and the system of polite graft is so extensive as to have become almost a recognized feature of the business. It is not merely the chauffeur who seeks his 'bit' but friends and relatives often must be taken care of, while in the sale of cars, even knights, dukes and barons are not above offering their influence for hire and collecting graft when a sale is made. They know practically nothing of tire guarantees on the other side, and if a car owner obtains 2,000 miles from a tire he considers, or is told to consider, himself fortunate. Prices also are at sixes and sevens and, although their actual proportions differ little, the prices of tires in inch sizes are so much higher than figures that prevail for millimeter sizes as to be almost un-understandable."

Sues Garageman for Repaired Car.

Because of differences which arose between them, and because the garage owner would not deliver the car when it was demanded, Brown's Garage, in Fairfield, Conn., has been made the defendant in a suit brought by F. H. Wells, not merely to recover the Buick car which he had left in Brown's establishment, but for $300 which he claims he would have made had he been able to obtain possession of this piece of property.

Three months ago the car was badly damaged through an accident. It was taken to Brown's Garage for repair. When the owner called for it, trouble arose and delivery was refused. Meanwhile, Wells alleges that he had an opportunity to dispose of the car, but as Brown refused to relinquish it the sale fell through, which, according to Wells, lost to him the sum of $300.

Channon's Tire Grip Appeal Argued.

The appeal of the H. Channon Co., alleged to infringe the Parsons patent, No. 723,299, owned by the Weed Chain Tire Grip Co., was argued Friday last, 1st inst., in the United States Circuit Court of Appeals in Chicago; the District Court on April 25 of this year granted the Weed company a preliminary injunction against the Channon company and a reversal of this ruling is sought on the grounds that the lower court erred in so deciding, a plea commonly made in seeking relief of this nature.

The Channon company manufactured the Gripwell and Roughshod grips, which are of the anchored type, and in the court hearings the anchored feature of the product is made an important point, the contention of the defense being that the fastening of the chains so that they cannot creep as does the Weed chain removes their infringing feature.

Judgments Pile up Against Courtney.

Although several judgments in which the name of Courtney appears and in some of which the Courtney Tire & Rubber Co., of New York City, is named as debtor, have been filed recently in the New York county clerk's office, most of them are directed at William J. Courtney himself. One against the tire company, for paper of about $200 value which was not met on time, was satisfied, but there are at least several unsatisfied against Courtney. One for $3,000 is held by Thomas A. Desmond, a crude rubber importer, who accepted a note as payment for goods. Others, for some $300, are for rent of an apartment at 542 West 112th street, New York City, the agents, Albert E. Gibbs and Charles W. Kirby, being the creditors.

Garagemen to Manufacture Trucks.

The Empire Automobile Co., which operates a large and well equipped garage in Glens Falls, N. Y., has leased the remainder of the building at 45-47 Warren street, in that city, a portion of which it heretofore has occupied, and in which the manufacture of trucks will be carried on in a limited way. The owners of the company, Frank M. Starbuck and Daniel H. Cowles, already have built several trucks which are in use in Glens Falls, and therefore do not lack experience.

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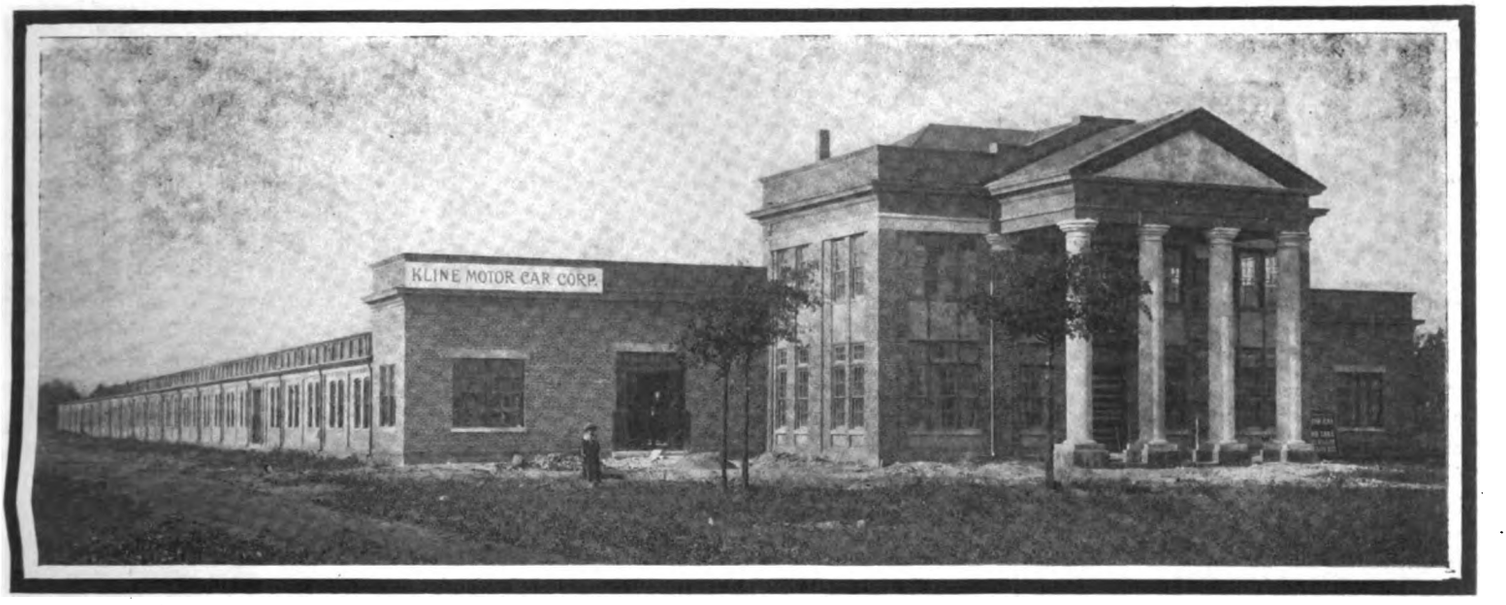
KLINE HEADQUARTERS TO BE REMOVED TO RICHMOND

Removal from Pennsylvania Already Well Under Way—Imposing Factory Erected in Virginia Capital by Virginia Capitalists.

Virginia capital, which last year was invested in the Kline Motor Car Corporation finally has brought about the removal of that company from York, Pa., to Richmond, Va. At the time the Virginians acquired an interest in the Kline corporation, it was stated that plants probably would be maintained in both York and Richmond, but it now transpires that so far as manufacturing operations and the conduct of its business affairs are concerned Richmond, Va., will be the Kline headquarters. The plant in York will not be wholly abandoned, but instead of being a factory it will be continued merely as a service station and salesroom.

The removal of the Kline machinery and other factory equipment has been in progress for some time, and so soon as the transfer is completed James A. Kline, general manager, and other officials of the company, as well as a large number of employes, will follow the machinery and take up their abode in the Virginia capital.

The factory in the latter city has been completed at a cost of more than $100,000 and, as the accompanying illustration serves to show, it is an imposing structure. It is formed of two parallel wings, connected at one end by a larger wing, in front of which and connected with it being a two and one-half story office building of the Colonial type. The main structure is of brick with white stone trimmings and cement floors. Each of the wings is 600 x 60 feet, the building connecting the two main wings being 30 x 60 feet. Within the court, between the two main factory structures, are the tracks of the Seaboard Air Line, which implies that the Kline corporation will be well situated both to receive and despatch goods. The new plant will afford a capacity of 2,000 Kline cars a year.



FACTORY IN RICHMOND, VA., ERECTED FOR OCCUPANCY OF KLINE MOTOR CAR CORPORATION

Schebler Not Wholly Lost to Wheeler.

Although he has retired from active participation in the affairs of the Wheeler & Schebler Co., as stated in Motor World last week, George M. Schebler still will serve as its consulting engineer and will, after his return from an extended vacation, be within call of his former partner, F. H. Wheeler. The company's name will remain unchanged and Wheeler's name will continue on his office door, as it is expected that he will be around the factory more or less when in Indianapolis.

Start-Lite to Remove to Michigan.

The Start-Lite Co., maker of the lamp lighting device of that name, is preparing to remove from Chicago to Muskegon, Mich., where it will establish itself in the former Henry motor car factory. It is expected that the removal will be completed about December 1st.

Stevens Succumbs to an Operation.

Following an operation, Frank M. Stevens, head of Stevens & Co., New York, who handle several important automobile accounts, died at his home in Rutherford, N. J., on Monday, October 28th. He was 53 years of age and is survived by his widow and two children.

COURT DECLINES TO DRAW COLOR LINE FOR TAXICABS

Ends Fight of New York's Biggest Operator for Distinctive Color, Even Though 'Tis Yellow—Victory for Independents.

"It is too well settled to require extended discussion that anyone may monopolize a particular color," is the language in which Judge Greenbaum, in the Supreme Court for New York County, on Monday, 4th inst., made decision in the fight of the Yellow Taxicab Co. to pre-empt yellow for its own purposes. Previously the Yellow Taxicab Co., which is the largest operator of those vehicles in New York City, and whose cabs are distinguished by a bright yellow color, styled Bristol orange, had obtained preliminary injunctions against a large number of independent operators and seemed in a fair way of monopolizing the color at stake. In his opinion, however, Judge Greenbaum states that the company was not entitled to a preliminary injunction, and in refusing to make the injunction permanent during the continuation of the case, he of course disposes of the temporary restraining order. His decision was rendered in the case of the Yellow Taxicab Co. vs. the City Taxicab Co., but six other similar cases were disposed of at the same time, his opinion applying to all. It is as follows:

"Plaintiff seeks to enjoin pendente lite the defendant as well as six other defendants in separate suits 'from maintaining and operating for hire taxicabs on the streets of New York so long as said taxicabs shall

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be painted or decorated a bright yellow color, which is more technically described as "Bristol orange," or in imitation thereof, which said color is applied on cabs, and the wheels painted the same yellow hereinbefore mentioned, and the spokes thereof striped with black and the bolt heads in the wheels painted black.' The complaint in each case is a printed form identical in language, saving only in the insertion in typewriting of a given number which the particular defendant displays upon his car.

"The plaintiff claims to have built up at great expense a successful business and acquired a large patronage by a carefully supervised system of operating its cabs, and that the distinctive yellow coloring of taxicabs as above described with spokes 'striped with black and bolt heads in the wheels painted black' was 'a well defined departure from the coloring of other taxicabs' in use prior to April, 1909, the time when the plaintiff's predecessor in title organized a corporation for the operation of taxicabs, which were and are known and advertised as 'Yellow Taxi' or 'The Yellow Taxicab.'

"A temporary injunction was obtained in each case upon the complaint and printed affidavits, identical in every respect excepting only that in the supporting affidavit of one Brazier there is a difference in the number of the cab of the given defendant, typewritten in a blank space reserved for that purpose. Brazier's affidavit is the only one which attempts to connect the defendant in each case with the alleged acts of unfair competition or infringement of plaintiff's alleged rights in the exclusive use of the yellow taxicab above described. He alleges in his uniform printed affidavit respecting each defendant as follows: 'That I am familiar with the cab operated by the defendant. . . . That I have seen this taxicab operated in and about the streets of New York, and I have followed it and watched it for the purpose of seeing the methods employed by the driver to get passengers. I have frequently seen the driver of the defendant's cab standing near the curb, as near as he could get to the line of yellow taxicabs operated by the plaintiff company, with his door open, calling "First car out," and I have seen passengers go to his car remarking, "This is a yellow taxi," or words to that effect, and the defendant has refrained from telling them their mistake and has by his language in substance led them to believe that he was operating a "yellow taxicab." . . . The car operated by the defendant so closely resembles the cars of the plaintiff company that it is not easily distinguishable from the cars operated by the plaintiff company and so closely resembles the cars of the plaintiff company that the public is deceived and misled.'

"Each defendant positively denies that he represented by act or word his cab as a yellow taxicab of the plaintiff, or did or said anything to mislead anyone using his cab in believing that it was the cab of the plaintiff. The acts complained of are twofold: First, that the defendant's cab so closely resembles the cabs of the plaintiff in its coloring as not to be easily distinguishable therefrom, whereby the public is deceived and misled, and, secondly, that the defendants are guilty of unfair competition in deceiving the public by the manner in which they solicit patronage. There is not a scintilla of evidence from which the court may draw its conclusions of fact as to the way the defendants' cabs are painted, the concluding paragraph of Brazier's affidavit being the only allegation bearing thereon.

"It is thus apparent that the moving papers are totally deficient in a most essential particular. But as the counsel for the defendants conceded upon the argument that the cabs of their clients were painted in a yellow color and in that respect were similar to the cabs of the plaintiff, I will briefly touch upon this feature of the case. The defendants deny that plaintiff and its predecessors were the first to adopt the use of yellow colored taxicabs as described by plaintiff, and allege that such yellow colored cabs have been in operation to a considerable extent before the plaintiff or its predecessors engaged in the business of operating taxicabs. But aside from the issue of prior use, it is clear from the plaintiff's presentation of the case that the broad claim is made to the exclusive right to use taxicabs for hire having a yellow covered body and chassis.

"It is too well settled to require extended discussion that no one may monopolize a particular color. The only cases in which the courts have recognized the exclusive right to a color are those in which the particular color was employed in combination with other characteristics, which taken together presented a new and distinctive feature from that used by others engaged in a like business (Ohio Baking Co. v. Nat. Biscuit Co., 127 Fed. Rep., 116, 121; Diamond Match Co. v. Saginaw Match Co., 142 Fed. Rep., 727, 728). As was aptly said in the Diamond Match Co. case (supra): 'The primary colors, even adding black and white, are but few. If two of these colors can be appropriated for one brand of tipped matches, it will not take long to appropriate the rest.' It follows that plaintiff was not entitled to the temporary injunction, which must be vacated, and that the motion for an injunction pendente lite must be denied."

Hayes Offering of Preferred Stock.

In order to retire a large part of its floating indebtedness, and to furnish additional capital to handle its increased business, the Hayes Mfg. Co., of Detroit, is offering for public subscription $100,000 of its 7 per cent. cumulative preferred stock, which represents the unsold portion of a total issue of $250,000. The offer brings out that during the past four years the company's net profits have averaged $75,000 and that the business in sight for 1913 amounts to $1,500,000, on which it is estimated a profit of $150,000 will be earned. The total assets of the company, which is one of the largest manufacturers of sheet metal automobile parts, are four times in excess of the amount of the preferred stock.

Weidley Heads Indiana Engineers.

George A. Weidley, chief engineer of the Premier Motor Mfg. Co., was elected president of the Indiana Division of the Society of Automobile Engineers at the annual meeting in Indianapolis on Friday last, 1st inst. Chester S. Ricker, chief engineer of the Henderson Motor Car Co., was chosen treasurer, and H. W. Deupree, of the Remy Electric Co., secretary.

During the evening the subjects of ignition and engine starters was generally discussed, point being given to the discussion by the presence of E. V. Hartford, of the Hartford Suspension Co., who explained in detail the operation and the idea behind the electric starter of which he is the inventor. M. Raginel, of the Ignition Starter Co., also dealt with the subject, reading a paper which treated starters of the various types.

To Girdle Globe for General Motors.

L. W. Place, who has had experience with both the Buick and Olds companies, has been appointed foreign representative of the General Motors Co. He already has his plans well in hand, having sailed from Vancouver, B. C., on October 30, for Sydney, Australia, which will be his first stopping place. He will be absent about 18 months, during which time he will visit every country of promise on the eastern hemisphere.

Canadians Take on Buffalo Electrics.

The Universal Electrical Economy Co., Ltd., of Montreal, Can., has secured the agency for Buffalo electrics for all that portion of the Dominion lying east of Windsor, Ont. At the present time, the Universal company maintains salesrooms and service stations in both Montreal and Toronto.

To Enlarge Federal Motor Works.

The Federal Motor Works, of Indianapolis, which is owned by John N. Willys, is making ready to enlarge its plant. The addition will be a one-story structure, of sawtooth construction, 50 x 450 feet.

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The Week's Incorporations

Washington, Pa.—Croton Motor Car Co., under Pennsylvania laws, with $300,000 capital; to manufacture motor cars.

Cleveland, Ohio—Perrine Mfg. Co., under Ohio laws, with $10,000 capital; to deal in motor cars. Corporators—R. A. Wilbur and others.

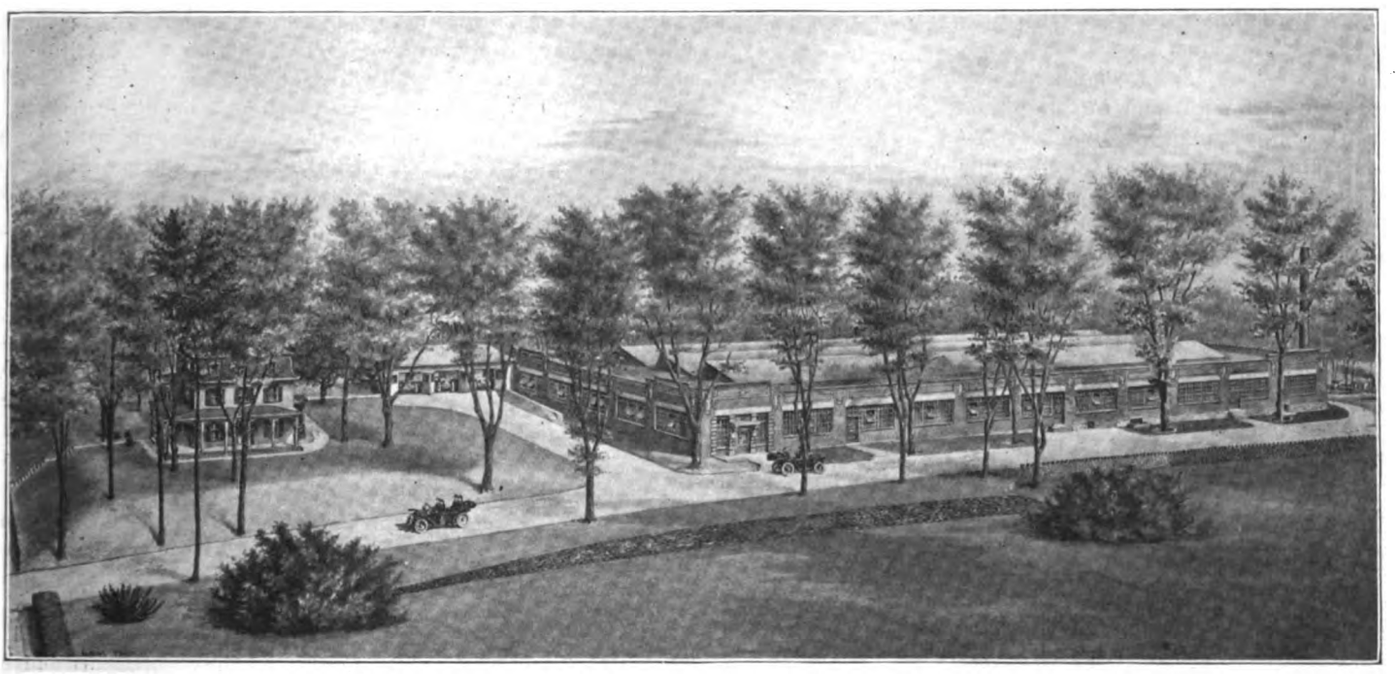
Akron, Ohio—Akron Welding Co., under deal in lubricants. Corporators—John M. Madole, Lewis Madole, Leo B. Davis.

Roanoke, Va.—Southern Motor News Corp., under Virginia laws, with $15,000 capital; to publish motor car statistics. Corporators—J. M. Stevens and others.

Moline, Ill.—Williams McLean Garage Co., under Illinois laws, with $3,000 capital; ital; to operate a garage. Corporators—Henry E. Paige, Louis E. Smith, Charles H. Buell.

Ahstabula, Ohio—Owen Rubber Co., under Ohio laws, with $10,000 capital; to manufacture rubber goods. Corporators—Thomas J. Owen, F. M. Henry, Frank A. Owen.

NEW HOME OF THE ATWATER KENT MFG. WORKS IN PHILADELPHIA, PA.



The building, which is a single-story concrete and steel structure, measures 200 x 125 feet and affords 25,000 square feet of floor space; seventy-five per cent. of the wall area is given over to windows. The plant is located on the main line of the P. & R. R. R., near Wayne Junction.

Ohio laws, with $10,000 capital; to manufacture automobile parts. Corporators—Milton N. Smith and others.

Cleveland, Ohio—Owners Oil & Grease Co., under Ohio laws, with $10,000 capital; to manufacture lubricants. Corporators—James V. O'Donnell and others.

Ludlow, Mass.—Stens Mfg. Co., under Massachustts laws, with $200,000 capital; to manufacture motor car tires. Corporators—Ashley R. Reucher and others.

Seattle, Wash.—University Garage Co., under Washington laws, with $25,000 capital; to operate a garage. Corporators—Charles M. Betterton, C. M. Shannon.

Evanston, Ill.—Pennsylvania Oil Co., under Illinois laws, with $2,500 capital; to to operate a garage. Corporators—C. H. Williams, W. R. McLean, A. G. Abraham.

Boston, Mass.—A. W. Cox & Co., under Massachusetts laws, with $10,000 capital; to operate a garage. Corporators—Arthur W. Cox, Charles B. Baldwin, Nelson B. Todd.

Chicago, Ill.—Electric Motor Chair Co., under Illinois laws, with $50,000 capital; to manufacture motor vehicles. Corporators—C. B. Crysler, J. G. Bennett, C. B. Traver.

Dover, Del.—Perfect Tire Sales Co., under Delaware laws, with $45,000 capital; to deal in motor car tires. Corporators—F. R. Hansell, G. H. B. Martin, S. C. Seymour.

Amherst, Mass.—Amherst Garage Co., under Massachusetts laws, with $15,000 cap-

Troy, N. Y.—Auto Salvage Corporation, under New York laws, with $2,000 capital; to deal in motor cars. Corporators—Michael Kennedy, Theodore P. Lowe, Mark F. Nichols.

Munice, Ind.—Props-Brooker Motor Co., under Indiana laws, with $4,000 capital; to deal in motor cars. Corporators—J. Cooper Props, George J. Brooker, Oliver P. Dunn, Jennie Brooker.

Chicago, Ill.—National Oil and Gas Generators Co., under Illinois laws, with $5,000 capital; to manufacture carburetters. Corporators—Walter D. Hawk, Sam S. Helmes, George E. Diersen.

Cleveland, Ohio—Lozier Sales Co., under Ohio laws, with $30,000 capital; to deal

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in motor cars. Corporators—W. H. Miller, A. G. Weaver, W. D. Anderson, V. C. Erman, J. M. Brown.

Boston, Mass.—Eliot Motor Car Co., under Massachusetts laws, with $250,000 capital; to deal in motor cars. Corporators—Moses H. Libbey, Roscoe G. Houston, William D. Wallace.

East Orange, N. J.—Funger Motor Trucking Co., under New Jersey laws, with $100,000 capital; to operate a motor delivery. Corporators—M. G. Funger, A. J. Grosso, D. L. Horton.

Ft. Wayne, Ind.—Eureka Garage Co., under Indiana laws, with $10,000 capital; to operate a garage. Corporators—E. C. Smith, C. J. Buhr, T. B. Adams, A. C. Hobrock, H. D. Alderman.

Clearmont, Mo.—Clearmont Motor Co., under Missouri laws, with $5,000 capital; to deal in motor cars. Corporators—Guy C. Cleary, Willard G. Carpenter, Bert R. Reynolds, Fred C. Newton.

Augusta, Me.—Goodyear Tire & Rubber Co. of South America, under Maine laws, with $3,000,000 capital; to manufacture and deal in motor car tires, etc. Corporator—E. M. Leafitt, Winthrop.

Lima, Ohio—Glenmore Lubricant Co., under Ohio laws, with $17,500 capital; to deal in lubricants. Corporators—John W. Glenn, Don C. Henderson, B. A. Crites, W. M. Scott, W. L. Nepille.

Cleveland, Ohio.—Perrine Mfg. Co., under Ohio laws, with $10,000 capital; to deal in motor cars. Corporators—H. A. Wilbur, Charles D. Wichner, H. A. Burton, Benjamin A. Gage, A. D. Dole.

Albany, N. Y.—Albany Motor Racing Association, Inc., under New York laws, with $1,000 capital; to promote motor car races. Corporators—John D. Keeler, Rufus P. Keeler, Samuel H. Shaw.

New York, N. Y.—Cathedral Park Garage, Inc., under New York laws, with $1,000 capital; to operate a garage. Corporators—Morris Klein, Katie Klein, Samuel Klein, all of 101 West 114th street.

Albany, N. Y.—Carbone Co., under New York laws, with $200,000 capital; to manufacture tires. Corporators—W. E. Greene, 100 Reade street, New York City; G. C. Leonard and W. G. Van Loon, Albany.

Pittsfield, Mass.—J. & B. Mfg. Co., under Massachusetts laws, with $25,000 capital; to manufacture ignition and other automobile appliances. Corporators—Edward S. Jacobson, Floyd A. Knight, John J. Whittlesey.

Asbury Park, N. J.—National Automobile Owners' Association, under New Jersey laws, with $25,000 capital; to deal in motor cars and accessories. Corporators—Arnold M. Huslsart, William F. Pattison, David W. Edwards.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve To Place Many Workers In New Places—Few Leave the Industry.

J. G. Budd has resigned as manager of the Victor Motor Truck Co., of Buffalo, to become sales manager of the Sanford Motor Truck Co., of Syracuse, N. Y.

After seven years' service, Thomas J. Hay has resigned the management of the Ford Motor Co.'s Chicago branch. He has been succeeded by D. E. Keith, previously the Ford manager in Indianapolis.

Macolm B. Richardson has been appointed district manager for the Franklin Automobile Co., with headquarters in Atlanta, Ga. He is an old Franklin man, but latterly has been connected with the Remy Magneto Co.

Albert Engelhardt, vice-president and secretary of the Universal Truck Co. of New York, has resigned those offices. He, however, will remain in the trade, having secured the Metropolitan agency for Stegeman trucks.

C. L. Morgan, former manager of the electric division of the General Motors Truck Co., has resigned that office to become identified with the St. Louis Billing Machine Co. He will establish headquarters in New York.

L. A. Austin has been appointed sales manager for the Mais Motor Truck Co., of Indianapolis. Previously he was sales and advertising manager of the Rutenber Motor Co., which offices he resigned to engage in the truck business.

Morton H. Luce has resigned the management of the Velie branch in Chicago to join the sales staff of the Marion Motor Car Co., of Indianapolis. He will become its eastern sales manager, with headquarters in New York City.

Stanley H. Keller, formerly New York State salesman for the United States Tire Co. out of the Buffalo branch, has been appointed manager of the new United States Tire branch which recently was opened in Rochester, N. Y.

Charles D. Smith has been promoted to the post of production manager of the Winton Motor Carriage Co., of Cleveland. Walter H. Doddridge succeeds to the management of the Winton service department, which for some time past was filled by Smith.

The General Motors Truck Co. having discontinued its advertising department, F. W. Kurtz, of course, has relinquished his post as director of advertising. Hereafter each of the General Motors subsidiaries will maintain its own advertising and publicity department.

J. W. Hobbs, manager of the Goodyear Tire & Rubber Co.'s Buffalo branch, has been promoted to the management of the more important branch in New York City, to which the Buffalo establishment hereafter will be subsidiary. Hobbs succeeds J. B. Maus, resigned.

To succeed Robert E. Fulton, who has been promoted to the post of assistant sales manager, David C. Fenner has been appointed manager of the International Motor Co.'s New York branch. C. W. Stratford, consulting engineer of the company, also has been promoted to the post of chief engineer.

Because of ill health, H. E. Schonacker has resigned the general management of the Marvel Carbureter Co., of Flint Mich., and will remove to the western part of the country. When he is definitely located, it is probable that he will set up in the automobile business as an agent or manufacturers' representative.

Fred A. Harris, former middle west supervisor of the United States Motor Co., has been appointed assistant general manager of the Hupp Motor Car Co., of Detroit. Temporarily that office has been filled by Harry Fosdick, who remains with the Hupp company but who will assume the title of director of sales, which is more in keeping with the class of work he has in hand.

Furthering its policy of having "men on the ground," R. E. Dennison has been appointed district manager of the Stewart Motor Corporation, of Buffalo; he will establish headquarters in Chicago and will have charge of Illinois, Missouri and eastern Iowa. W. T. Butler also has been appointed a Stewart district manager but with headquarters in Buffalo. He will control New York State and northern Pennsylvania.

Bosch Engineer to Visit Europe.

Victor W. Kliesrath, chief engineer of the Bosch Magneto Co., of New York, is booked to sail to Europe to-day. He will make the rounds of most of the European automobile factories and, incidentally, visit both the London and Paris shows.

Regal Export Chief Again Goes Abroad.

R. M. Lockwood, head of the Regal Motor Car Co.'s foreign department, sailed on Saturday last, 2nd inst., for a business tour of Great Britain and the Continent. He, of course, will be in attendance at both the London and Paris shows.

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In the RETAIL WORLD

Warde L. Mack, of South Bend, Ind., has become a dealer; he has the Franklin line.

The Eckberg & Place Garage Co., of Fall River, Mass., has entered the selling field; it will stock Franklins.

W. J. Johnson, in Martinez, Cal., is building a new garage on property adjoining his present location.

A four-story garage and office building is being erected on 10th street, Des Moines, Ia., by The Herring Co.

V. L. Prazak and A. C. Fajman have secured a site upon which they will build a garage in Howells, S. D.

W. F. Gullick, of Onawa, Ia., has purchased a garage in Sloan, in the same state; he will deal in Overlands.

Spencer Wright has leased a new garage which is being erected in Oneonta, N. Y. Elvin Easton is the owner.

Thomas Vreeland has purchased the People's Garage in South Bend, Ind. He already has taken possession.

Clyde Waters has purchased a garage in Jefferson, Tex. He also conducts an agency in Perry, in the same state.

Fred Damp and Fred Tillisch have let the contract for a garage in Walnut Grove, Minn. It will be 44 x 60 feet.

Edgar S. Harrington, proprietor of the Milford (Del.) Garage, is about to erect a new building for his business.

J. H. Hileman of Waterloo, Ia., is opening salesrooms at 310 West Park avenue; he will represent the Haynes.

The Elyria (O.) Auto Sales Co., which rerently was organized, has let the contract for its garage and salesrooms.

The Highland (Cal.) Garage has been purchased by A. A. True and N. Levering; they will add a machine shop.

E. L. Clauss & Son have opened a garage in Hollywood, Cal., at 6450 Selma avenue; it is styled Baker Garage.

Bruno Seibel, a well-known racing driver on the Pacific Coast, has opened a garage at 773-9 3rd street, San Diego, Cal.

F. A. Hoyt and H. M. Garretson will soon establish a garage in Lansing, Ia. They have the Overland agency.

John Bertelson of Litchfield, Minn., plans to enter the selling field in Valley City, N. D. He will form a copartnership.

J. L. Bell and Ralph Wilson have entered the garage trade in Salt Lake City; their place of business is on State street.

E. H. Knoop of Chicago has let the contract for a garage to be erected at 666 Sheridan road; the approximate cost is $5,000.

Permission has been granted to Frank L. Roberts to build a garage at 1595 Massachusetts avenue, Bainbridge, Mass.

J. B. Thompson of Louisville, Ky., has secured authority to build a brick garage at 3d and A streets; it will cost $3,000.

John Christensen & Co., of Galveston, Tex., are about to build new salesrooms on Tremont street; they will cost $20,000.

Marshall Miller of Freeport, Ill., has taken over the garage and selling business formerly conducted by John Rosenstiel.

Dr. H. G. Gross and G. F. Pease have entered the supply field in Eureka, Cal. The firm style is Humbol Auto Supply Co.

Waterland & Andrews are building a garage at 6th street and Broadway, Chico, Cal. It will represent an expenditure of $10,000.

The Heilbron Rubber Co. has opened up on East Union street, in Pasadena, Cal. Miller and Gibraltar tires will be stocked.

W. L. Hicks, trading as Hicks Auto Supply Co., has engaged in business in Nashville, Tenn. He is located at 804 Broadway.

The Pioneer Commercial Co., dealer in trucks and sight-seeing cars in Los Angeles, Cal., is to build new quarters on Alameda street.

S. E. Raub has secured permission to erect a garage at 3024 North Meridian street, Indianapolis. The cost is estimated at $3,000.

A. M. Belina of Owatonna, Minn., has sold his garage business to George Klemmer; Belina was the first garageman in his town.

The Sperl Garage, in New Ulm, Minn., has been purchased by Edward Larson and John Nagel; the firm name will be Larson Auto Co.

Glenn A. Calkins has taken over the Ford agency in Riverside, Cal. He also has opened a garage and salesrooms at 446-48 8th street.

The Green Motor Car Co., of Newark, N. J., plans to erect a one-story garage, 60 x 50 feet, at 9-13 Bleecker street; it will cost $6,000.

W. Matthal has had plans prepared for a garage which he will have built at 2533 Prospect street, Kansas City, Mo. It will cost $4,000.

The Pullman Taxicab Co., of Philadelphia, Pa., will build a three-story garage, 74 x 86 feet, at 1542 Wood street; it is to cost $45,000.

Frank Fosha and L. P. Larson have opened a garage in Green Bay, Wis., at 206-7 Washington street; the style is Washington Garage.

I. C. Golden of Nevada, Ia., has purchased from J. R. Davidson the Hudson and Krit agencies; he will display his lines at Post Bros.' Garage.

O. R. Fuller of Los Angeles, Cal., is to build a two-story garage at 719 North Alameda street; the specifications name $20,000 as the cost.

A. V. Rothwell has bought the Koch Garage, at South Ashley and Madison streets, Ann Arbor, Mich. He is the Buick dealer in that city.

Charles McKenzie and Frank Cockburn have purchased the Milton (Ore.) Garage from George and Bert Miller; the consideration was $2,000.

The Greenleaf Automobile Co., of Waterville, Kan., has purchased the Thomas agency in that town; A. C. Geffert is the Greenleaf manager.

A garage is being built at 13th street and Grand avenue, Milwaukee, Wis., for the W. E. Allen Co. It will represent an expenditure of $15,000.

The Star Garage, in Mishawaka, Ind., has been sold by W. M. Stark of Elkhart to Robert Harvey. Harvey also operates the Harvey Auto Livery.

H. Penner and W. D. Angel, of Milwaukee, Wis., plan to build a garage on Oakland avenue, between Folsom place and Newberry boulevard.

R. S. Keeves of Oregon, Mo., has sold his interest in the J. H. Keeves Automobile Co. to his son, John H. Keeves; the consideration was $6,200.

Albert E. Whitney, of Elmira, N. Y., has bought the building formerly occupied by the Empire Mobile Car Sign Co., and will open a garage therein.

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Webster City, Ia., is to become possessed of a new garage. It will be erected by Hanson & Tyler, who will expend $30,000 in its construction.

Central Garage Co., Inc., is a new entry into the garage field in Nashville, Tenn. It has opened up at 124-32 Third avenue. H. A. Williams is president.

P. B. Christian, Elmer Farmer and Ernest Loel are to open a garage in Waverly, O. The same location previously was occupied by Ehrman & Gordon.

The Omaha (Neb.) Taxi Co. has bought out the business and equipment of the Paxton Taxi Co. The deal carries rights to the stand in front of the Paxton Hotel.

Jay Livingston and William L. Crosson have purchased the Hiatt & Reader Garage in Hastings, Neb. The firm style will be Livingston & Crosson; they have the Krit agency.

James Morris, for some time manager of the Chalmers repair shop for the Union Supply Co., of Toledo, O., has entered business for himself; he has opened up a repair business at 109-11 11th street.

Warren L. Seeley, for three and one-halt years secretary of the St. Paul (Minn.) Commercial Club, has resigned to enter the automobile business; he is associated with M. J. Osborn, St. Paul distributor of White and Detroit electrics.

The recently organized Owl Garage, at 2313 Hennepin avenue, Minneapolis, Minn., has taken the Agency for Woods electric cars; a service station has been opened at Hennepin avenue and 24th street. Fred H. Day and Harry J. Murphy constitute the organization.

The Albany (N. Y.) branch of the Franklin Automobile Co. has been sold to Clarence G. Heck, who will continue it as a dealer; Heck was manager of the branch for several months past and has been connected with the company in other capacities for several years.

The Central Garage & Supply Co., of Toronto, Ont., is erecting a seven-story concrete building at Shepherd and Temperance streets, wherein it will handle the sale of Abbott-Detroit cars; the structure will cost $150,000 and will have 255 linear feet of display windows on the ground floor. T. S. Blues is president and Thomas Enright, secretary and treasurer.

Reversing the usual order of things, the Dodge Motor Vehicle Co., of Cambridge, Mass., which heretofore has handled gasolene cars, has relinquished them wholly in order to devote itself to the sale of Buffalo electrics, for which it has secured the agency for six counties in Massachusetts. The Dodge company already has two immense garages — one in Cambridge, the other in Boston—and shortly will open a salesroom near the corner of Boylston and Gloucester streets, in the latter city.

Abbott Motor Car Co. of Cleveland is the style under which a new Abbott-Detroit agency has been established in that Ohio city; it has a territory of several miles radius and has temporary quarters at 2027 Euclid avenue. The officers of the company are: President, W. F. Schmitt; vice-president and general manager, C. H. Davies; secretary and treasurer, J. J. Schmitt.

More Branches on Makers' Trees.

The United States Tire Co. has opened a branch in Washington, D. C. It is located at 1303 H street.

The Dayton Airless Tire Co., of Dayton, O., has opened a branch in Cincinnati, at 803 Race street. It will be in charge of D. H Phister.

The Stromberg Motor Devices Co., of Chicago, has opened a branch in Detroit at 465 Woodward avenue. It is in charge of N. H. Minniter.

The Haynes Automobile Co., of Kokomo, Ind., his established a branch in Fresno, Cal., of which W. G. Dandy is manager. It will be subsidiary to the Haynes branch in San Francisco.

The Kline Motor Car Corporation has opened a branch in San Francisco which will be under the direction of Frank C. Renstrom & Co. It will control practically all the Kline business on the Pacific Coast.

The Cutting Motor Car Co., of Jackson, Mich., is about to establish a factory in Kansas City, which will be in charge of H. Beach. The branch will control parts of Missouri, Texas, Oklahoma, Kansas and New Mexico.

Minor Business Troubles.

Following the filing of a bill of complaint by the Fisk Rubber Co., a receiver was appointed last week in the Federal court in Baltimore, Md., for the Southern Auto and Marine Supply Co. The rubber company claims an indebtedness of $275.31.

Creditors this week filed a petition against the Central Tire Supply Co., of 2540 Broadway, New York City; the petitioners and their claims are: Diamond Rubber Co. of New York, $1,024; B. F. Goodrich Co., $453; Lowe Motor Supplies Co., $127.

On the petition of creditors, United States Judge Day, in Cleveland, O., last week, appointed a receiver for the Ohio Auto Carriage Co., of which Ralph Goldsworthy is proprietor. The petitioners are Dr. H. D. Champlin, the Horning Electric Co. and the Allenized Water Co., all of Cleveland.

The George F. Wallin Co., Inc., of 266 West 58th street, New York City, dealer in accessories, on Friday last, 1st inst., made an assignment to Louis Frankel for the benefit of its creditors. The company was incorporated March 27, 1911, with a capital stock of $10,000; George F. Wallin was president and Charles A. Christman secretary and treasurer.

An involuntary petition in bankruptcy was filed in the Federal court on Monday last, 4th inst., against the Auto and Aeronautic Supply Co., of 2100 Broadway, New York City, by the H. Philips Rubber Works, the Century Tire Co. and the Stein Laplock Tire Co. The liabilities are $3,400 and the assets $2,500. Henry Philips was appointed receiver with authority to continue business 20 days.

New Process Completes Plant Enlargement.

The New Process Rawhide Co. has enlarged its already extensive plant in Syracuse, N. Y., by the addition of a four-story wing extension, 65 x 185 feet, at right angles to the old building, and by a heating plant, 60 x 50 feet, in the rear. The new buildings are fireproof throughout, having steel frame work, reinforced concrete floors, concrete roofs, brick curtain walls and steel window sashes. New equipment, to the value of $100,000, has been installed in the buildings, making what is believed to be the largest and most complete single building plant in the world devoted exclusively to gear making and gear fitting.

England's Exports and Imports Go Higher.

During the nine months ending with September, Great Britain's exports of cars, chassis and parts attained a value of £2,532,537 as against £2,126,602 during the corresponding period of the previous year. During the month of September itself, the exports increased from £273,301 to £340,125. For the nine-month period, the imports totalled £5,452,685 as against £4,565,193. For the month, the record was £531,059 as against £485,118 during September, 1911.

Deposit Dealer Disputes Tire Bill.

Difference of opinion over a bill of $66 is responsible for an action now being prosecuted in the Supreme Court for New York County by the Fisk Rubber Co. against William G. Dailey, a garage operator at Deposit, N. Y. It is in the nature of a disputed account.

Recent Losses by Fire.

Elgin, Ill.—Manley's Garage and fourteen cars destroyed. Loss, $17,000.

Rochester, N. Y.—C. D. Brown, garage and livery equipment destroyed. Loss, $50,000.

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THE MOTOR WORLD

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN E. F. HALLOCK

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Advertising Manager
HOWARD L. SPOHN

WESTERN ADVERTISING MANAGER
W. H. TRIPP, 1001 Ford Building, Detroit
GUS. H. JOHNSON C. H. HANDERSON
DETROIT, 1001 Ford Building CHICAGO, 1441 Monadnock Block
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OVERCHARGING THAT CAN BE AVOIDED.

Not a little of the distrust with which car owners sometimes regard proprietors of repair shops is due to causes which, while not directly the fault of the repairmen, can be and should be remedied by them, for the consequences are injurious, from a business point of view. An example from real life will best bring out the point.

A new motor had to be installed in a car, and it was decided to put in one that differed considerably from the original engine. The repairman who was entrusted with the work made an estimate that was satisfactory, but he was not tied down to the figure he named. As the shop was crowded, the work was done in a neighboring shop, there being a working arrangement between the two establishments. A couple of trusted men were detailed for the job and were evidently implicitly relied upon. To make a long story short, the time required to install the engine was about double the estimated time and the bill presented exceeded the estimate by a large amount. Moreover, as it turned out, the work was most unsatisfactory and had to be done over again. The men "loafed on the job," doing practically nothing for days at a time, and yet convinced their employer that their time was honestly employed. The repairman made his bill accordingly, fought the objections to its amount and in due time received his check.

The discovery of the poor workmanship, coming after the payment of the exorbitant bill, cost the careless repairman many profitable jobs, for the story was somewhat widely circulated by the owner of the car. The case is by no means unique. There are not a few repairmen who take the word of their men for what is not so, and render what they believe to be honest bills; but they rarely escape being classed with the "sharks" and their reputations suffer accordingly.

The remedy is a systematic method of checking which will compel the men to account for their time in detail, so that any waste of time can be detected and stopped at once. With a good checking system, "soldiering" to any great extent is rendered very difficult, and leakage in many unsuspected directions can be effectually stopped.

SOLVING THE "SHOW ISSUE" PROBLEM.

Solving the used car problem is not the only difficulty that has confronted the trade. The solution of the so-called "Show Issue" in itself has constituted no small problem. While the used car problem always faces the trade, the "Show Issue" problem confronts the industry with greatest force at about this season of each year.

Every publisher who by any hokus-pocus can give his publication even a temporary automobile complexion feels justified in formulating and presenting to the trade a "Show Issue." Practically all of them are issued for advertising purposes only; the purposes they may serve and the good they may do are secondary considerations.

Of right, the automobile publications which work year in and year out for the interests of the industry are most entitled to consideration, but in many instances their Show Issues have left much to be desired and have not served the best purposes of those whom they are designed to serve. Always they have made their appearance at about the time the shows are nearing their completion; never at a time or in a form to permit intelligent planning on the part of dealers who attend the shows, or who would attend them were truly adequate information available.

In seeking to render this service, and to evolve a solution of the problem, Motor World has decided to issue its big Show Number three weeks in advance of the opening of the New York show. In other words, it will be a Show Information Number and will bear date December 28th. The information it will present, and the way it will be presented will be of real help to those who exhibit and to all who contemplate viewing the exhibitions; it will permit intelligent planning and promote and facilitate intelligent purchases. It means a breaking away from long established custom, but we believe it will be a departure that will be welcomed by exhibitors as sincerely as it will be welcomed by dealers.

Thanks to the unremitting efforts of their manufacturers, it no longer is possible rightly to place much blame on spark plugs for irregular running of the gas engine. Sooting and short-circuiting and cracking is the exception and not the rule nowadays. It has not been easy to bring these necessary adjuncts to the internal combustion engine to their present state of perfection, for theirs is a hard life; and they have a hard past to live down. But where there's a will there's a way, and the way to permanent improvement has been found and well established.

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KEEPING JACK FROST OUT OF THE COOLING SYSTEM

Pros and Cons of the Best Three Methods Discussed—Why Alcohol Is Least Harmful—Proper Proportions to Use.

November is a seasonable time to recall the fact that the radiator of a car radiates just as effectively when the air becomes colder than the water as it does when the water grows warmer than the air. The result is that the radiator becomes a highly efficient freezer in winter—the more so for the reason that water that has been heated freezes more rapidly than water from which the air has not been expelled by heating. Therefore, something should be done to prevent freezing even when the air hardly seems cold enough to make any trouble in the circulating system.

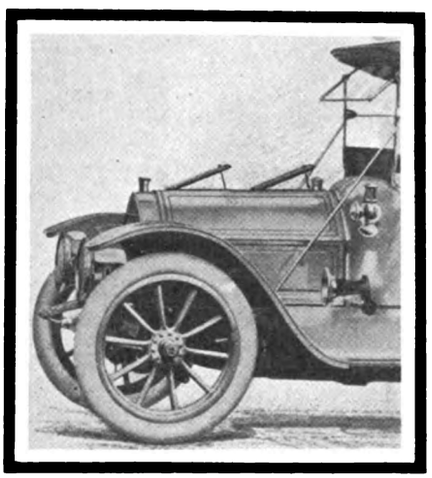
Of course, there is the good old makeshift of throwing a robe or blanket over the radiator; but this has disadvantages other than the purely esthetic one of unsightliness. In the first place, the robe may be removed by some conscienceless miscreant. In the second place, the robe gives most protection where the least is needed and the least protection where the most is wanted. The warm air and warm water naturally rise and the colder elements settle to the bottom and are still further cooled by contact with the outer air; the pump, return piping and the bottom the radiator are liable to freeze in cold weather while the top of the radiator still may be comfortably warm. It helps somewhat to make a protector for the bottom of the radiator to retain heat at that point, for once the water freezes there it is decidedly difficult to thaw it without getting the car into a warm place. The safest procedure, however, is to fill the circulating system with an antifreezing solution and submit to the necessity for giving it a little attention.

The three substances that are most familiar as reducers of the freezing point of cooling water are alcohol, glycerine and calcium chloride. Each has its advantages and each has objectionable features. Alcohol is rather expensive, evaporates out of the water, leaving a weak mixture that has a problematic freezing temperature, is apt to be deceptive because the rate of evaporation is unknown, and has a deteriorating effect on rubber. Glycerine also has a disintegrating effect on rubber hose connections, and it decomposes at high temperatures with an accompanying evil odor. Calcium chloride sets up an electrolytic action on the metal that contains it, and, if impure, as it not infrequently is, also has a corroding effect. Alcohol is the least harmful of the three.

One part of alcohol to three of water will not freeze until the mercury drops to zero; 3½ parts of alcohol to 6½ parts water will stay liquid until the thermometer registers 15 below zero. A mixture of 25 per cent. glycerine and 75 per cent. water freezes a few degrees below zero, and by increasing the proportion of glycerine to 35 per cent. the freezing point goes down to 15 below zero. Calcium chloride 20 per cent. and water 80 per cent., by weight, will freeze slightly below zero, and 25 per cent. of the substance will bring the freezing point down to 20 below.

Little Known Features of Well Known Cars

That heated air rises, and that high temperatures and changes of temperature through wide limits can in no way be construed as being beneficial to paint and varnish are little points which are doubtless known to all those who have to do with the production of motor cars, but it is rare that use is made of the knowledge to insure longevity to the paint work on the hood which covers the motor. On Pierce-Arrow cars, however, cognizance is taken of both facts, and to the ample space around the flywheel which is afforded for the ventilation of the motor compartment has been added that afforded by two small ventilators on the top of the hood, by way of preventing chipping of the paint on the hood.



PIERCE-ARROW HOOD VENTS

As shown in the accompanying photograph, the ventilators are provided with hinged doors, the hinges positioned on the forward ends, so that when the car is in motion the warm air which otherwise would be pocketed up against the metal hood to the detriment of the paint work, is drawn off. In cold weather, when no added ventilating space is needed or during rainstorms, the ventilators can be closed, spring clips being provided to prevent rattling. Naturally, when the car is stopped, either the action of the fan, if the motor is running, or convection currents if otherwise, insure ventilation.



November 8-16, London, England—Society of Motor Manufacturers and Traders' annual show in Olympia Hall.

December 7-22, Paris, France—Paris Salon.

January 6-11, Cleveland, Ohio—Cleveland Automobile Show Co.'s exhibit in the Central Armory.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, Philadelphia, Pa.—Philadelphia Automobile Trade Association's exhibit in the First and Third Regiment Armories.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

January 27-February 1, Detroit, Mich.—Detroit Automobile Dealers' Association's show in Wayne Gardens.

January 27-February 1, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's Show in the State Armory.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

February 10-15, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Commercial vehicles only.

February 10-15, Minneapolis, Minn.—Minneapolis Automobile Show Co.'s show in the National Guard Armory.

February 17-22, Kansas City, Mo.—Kansas City Automobile Dealers' Association's show in the Convention Hall.

March 3-8, Pittsburgh, Pa.—Pittsburgh Automobile Dealers' Association's show in Duquesne Garden.

March 24-29, Indianapolis, Ind.—Indianapolis Automobile Trade Association's show.

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SOLUTIONS OF THE USED CAR PROBLEM

In Competition for Motor World's Cash Premiums of $50, $25, $15 and $10 for the Four Best Articles Dealing With the Subject.

By MARSHALL L. COOPER, Denver, Colo.

As the best solution of the second hand problem confronting the trade, I suggest that the automobile manufacturers and dealers throughout the United States form an association and call in all the old wrecks, throw them into the scrap and pro rate the expense by assessment on all those who constitute the organization.

By JOHN WETAH, Racine, Wis.

There seems to be but one practical solution for the disposal of the old car, and it is within the ability of practically all legitimate dealers. It is a method that some dealers in large cities have pursued to some extent, but it does not seem to have been considered to any extent by the dealers in small towns. It is the reconstruction of the old models so that they can be used for commercial purposes, which usually can be done at very little expense, especially if the dealer is careful to place the car where it is best suited for the purpose.

There are hundreds of purposes for which old cars can be used and where they will give good service. Almost any retail merchant, contractor, real estate man, truck farmer, or expressman can use these old cars when properly equipped—and in most cases it could be equipped or converted at a very low cost. In most cases it simply would mean the fitting of a body-box back of the front seats, such as can be purchased from wagon makers at a reasonable figure or such as can be made by a local carpenter under the direction of the agent.

One thing the dealer must be careful of is not to misrepresent the capacity or ability of the car, or he will kill off many future prospects. He must from the start be prepared to stand back of any promises he may make, as he must not forget that he is now dealing with a class of people who are buying with a view of making money. Every successful purchaser will increase the dealer's business in this direction, and, per contra, a dissatisfied customer will kill many prospects.

I do not mean that the agent can take in trade all the old cars that are brought to him regardless of their age and worth and sell them for commercial purposes, because many old one- and two-cylinder cars are not worth the price of a new set of tires, and should be consigned to the scrap heap, excepting such parts as the dealer may be able to use in repair work. However, most of the four-cylinder models which have been made within the last three or four years are still good for commercial purposes and could be taken in trade at reasonable figures, and in some instances, after conversion, could be sold at a profit. If the small dealer prepares himself to handle the old cars in this way, he will find that many sales he now loses to the city dealers he will be able to make himself, and at the same time build up a profitable repair and supply business by the increased sales he will make during the season.

It looks as though many of the good low-priced car builders will build six-cylinder models, and while many of these will be new sales, there will also be many trades where the dealer must take the old four-cylinder cars as part payment; and as most dealers have only a limited capital to do business with they must prepare themselves for a market to dispose of the old models taken in trade, and there cannot be any better way of disposing of the old models than as outlined.

It is much better than unloading these old models and selling them to irresponsible people who should not be encouraged to buy automobiles, as they usually become a burden on the dealer, for it is frequently necessary for the dealer to keep such cars in repair for a considerable length of time, especially where such cars are sold upon time payments. This would not generally be the case where such a car was sold to a merchant, as it is easier to bank paper given by a merchant than paper given by a man dependent upon a salary for a living.

There is no better time than the fall of the year for the dealer to commence making his trades and getting in the old models, overhauling and equipping them with suitable bodies and finding customers for them—he can better afford to do this now than later, when he should be working on new prospects.

There are many arguments the dealer can use to enthuse the prospective purchaser with when offering an old model in this way—one in particular is that the car can be sold at a reasonable price—that it is a standard product; that repairs and replacements can be made with less delays than would be the case with most of the new light delivery cars now being offered, as most of them are assembled products, and while they are guaranteed by the manufacturers, some of them are not financially able to stand back of their experiments.

These arguments are sound, and if they are properly placed before the prospect they will bring results, as the price that can be made is a great temptation. Every agent should equip one of the old models himself and offer it for demonstration, but by all means keep it clean and do not have it nicknamed "Betsy" or "Maud," as is usually the case where there are hangers-on around the garage. Otherwise the dealer should go after this business as he would to sell a new car from the factory—but the chances of sales will be much better if the demonstrating car is kept clean and ready for business.

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WIDE-AWAKE MERCHANDISING In the MOTOR TRADE

LEARNING FROM OTHER BUSINESS SUCCESSES.

Selling automobiles is a real business, after all. The "game" idea is being pushed so far back that it is almost out of sight and, figuratively speaking, the vast majority of dealers have taken in their belts a notch or two, rolled up their sleeves and pitched into real work.

Such dealers are learning to appreciate the meaning of merchandising and beginning to apply it to their business. They are studying the successes of the grocer, the hardware man and the department store. They realize that from these established businesses they may learn much that is of permanent value. They are looking for "germ" ideas from which they may evolve plans or methods of merchandising suitable particularly for the automobile business.

Department Store as a Model.

Naturally, the department store looms large on the horizon because of general success of such stores and because they display the merchandising instinct to an unusual degree. Of course, exactly the same methods cannot be employed in the sale of automobiles, but the same principles that make the department store a success will help any dealer in the more profitable conduct of his business.

The fundamental idea back of the department store is expressed in this thought: "It pays to do all of the things you can for the head of the family." The more things you can do for the family the more opportunities you have of doing them—at a profit.

Opportunities Within Easy Reach.

At once someone asks, "How on earth does that apply to the automobile dealer?" Nevertheless, it fits in with the modern idea of the automobile merchant in many ways. And once he gets the idea well fixed in his mind and begins to use his imagination and his vision the automobile merchant sees a wealth of opportunities at his door—nay, within his very reach—that he never saw before. He changes the department store man's slogan to read, "It pays to do as many things as possible for the automobile owner. The more things you can do for him the more opportunities you have of doing them—at a profit."

Doing Customers a Good Turn.

The moment an automobile dealer gets this idea—and acts on it—he becomes a merchant. He commences to look for opportunities for his customers. For instance, someone from a factory drops in and offers him a certain lot of tires "at a price." He can sell them under the market if he buys them and still make a profit. He knows what size is most in demand, so he 'phones half a dozen customers and tells them of the bargain he has for them—or posts a sign in the garage, quoting the special prices. He has done a good turn for every customer who takes advantage of his suggestion and has made a profit besides.

Big Things Have Small Beginnings.

Again, he hears of a special offer on spark plugs, on robes, on metal polish, on wrenches, tools, or whatever it may be. He handles lot after lot and cleans them out. Manufacturers' salesmen learn what he is doing and they come to him with special stuff. He sells not only to his own customers, but there soon comes in the man who bought a car elsewhere. He gives this man a splendid deal on what he wants, gives him every other attention, and the man comes again—gets into the habit of dropping in for supplies. He feels at home in the dealer-merchant's garage—begins to talk car—and pretty soon, instead of a spark plug customer the dealer has a car customer.

"The merchandising idea isn't so bad or so impracticable, after all," he ruminates. "It's helping to bring in new customers and it's helping me to keep the old ones."

This type of dealer sees still further opportunities. He sees at once how every man in his employ can be made a salesman. He interests them all in his plan. Next time a transient tourist drives in for gasolene and oil he gets it quickly—and while he is pulling out his change the garageman says, "How's the water in your radiator? Had I better put in a little?" "How about oil?" "Here's some great cylinder oil in one-gallon cans—most people like to carry an extra gallon—they feel safer with it," and so on.

People like to have things suggested to them. Often they forget or overlook the very thing they intended buying. With a force of employes working along these merchandising lines a profitable business can be built with very little, if any, increase in overhead expense.

DISCOURTESY THAT DRIVES AWAY TRADE.

Two men of more or less prominence in the Chicago accessory trade, and two of their friends were on their way to a funeral a few Sundays ago—all four were pallbearers and dressed accordingly. Discovering the need of more air in the tires, they drove into an Oak Park (Ill.) garage. The proprietor was there—but, alas! he was properly attired in "Sunday clothes," tennis shoes, etc.

"Can we get some air here?" politely asked one of the gentlemen.

"Yes; you'll find a pump over there in the corner," said the dapper proprietor, resuming the perusal of his Sunday paper.

They found the pump, of course, and inflated their tires, but—and here's where the moral lies—in the car were two "prospects," both of whom were going to buy a car very shortly, and one of them was rather keen on the car sold by this particular dealer.

As they went out the latter remarked: "If that's the 'obliging' agent I would have to

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do business with, excuse me from buying a ——— car!"

Just as you never know where lightning will strike, so you can never tell when you are driving away a prospect.

The spirit of courtesy is always good business. The man who runs a garage has to do a lot of things for which he receives no thanks, but it's much better salesmanship to have the thanks coming than to have it the other way.

CLOSING SALES AND DEVELOPING PROSPECTS.

A Cleveland dealer, who handles five counties in addition to the city of Cleveland, keeps one salesman and a mechanic continuously on the road. They travel together, and as soon as they enter a town they get into touch with the live prospects. Where a sub-dealer is established, they help him and have been the means of closing many sales. In towns where there is no sub-dealer they learn through the merchants and town gossips who in the vicinity are interested in cars, and they go after them in earnest fashion. The plan has worked wonders in developing business where a catalog or photograph would not arouse more than passing interest.

KEEP REPAIR JOBS WELL OUT OF SIGHT.

The sight of automobiles in every possible stage of repair—some with engines dismantled, others with transmissions out, and again another with differential being fixed, is not calculated to inspire confidence in the product. Nevertheless, this is precisely the exhibit that greets the man at probably 50 per cent. of the garages at which he may call.

That repairs are necessary and that most of them are due to careless driving or neglect, may be true, bue it is no reason why repair jobs should occupy the center of the stage, so to speak.

The business of the automobile dealer primarily is to sell cars. Anything that will help him sell them should be featured. Anything that in the least hinders his sales should be retired to the background or take place behind the scenes.

This means that the separate repair shop, whether it is in the sales building, shut off by partitions, or in another building, is a vital element in modern automobile merchandising.

A Boston dealer who removed his repair shop from immediately below his salesrooms to a location two blocks away found that it paid, and paid well. Thereafter the angry wail of the disagreeable customer was never heard in the vicinity of the salesroom. Incidentally, he found that the efficiency of the separate repair department was immeasurably increased as a result of the separation.

It is well to remember the value of first impressions and to appreciate that it is good business to put one's "best foot foremost." Repair jobs out of sight are out of mind of the purchaser.

MAKING ADVERTISEMENTS SERVE DOUBLE PURPOSES.

One way to cash in on the manufacturer's advertising and link it up with your store is to cut out the advertisements as they appear and attach them neatly to the windows of the store or to bulletin boards placed in the windows.

In the last analysis the manufacturer's advertising is done for the benefit of the dealer and places him directly in touch with the consumer.

The weak part of a proposition always is when the dealer fails to recognize the opportunity and let it pass altogether.

A good plan is for the dealer to run his own advertisement in his local paper immediately following the appearance of the manufacturer's announcement in the big general magazines and weeklies and follow it up by the clipping and pasting procedure referred to. This costs little and focuses the big advertising campaign of the manufacturer down to each particular store, thus unmistakably identifying the latter as the place where the cars so advertised are sold.

A page advertisement from the Motor World, for instance, neatly clipped and trimmed and mounted on a clean, stiff piece of cardboard, with a heavy red or black line around to set it off, makes an interesting and valuable display that is sure to attract.

PAYS TO BE GENEROUS WITH FENCE SIGNS.

Garagemen seeking the tourist trade—and there's no end of them—find that one of the most profitable investments they can make is to sign-post the roads several miles in all directions. It helps the tourist and usually he goes straight to the garage so advertised. The inevitable conclusion is that the garage with enough enterprise and public spirit to do such good work deserves the most generous support. Of course, there is nothing new about the idea. The point is that there are thousands of opportunities for doing this work, which is a very inexpensive and fruitful form of advertising.

FREE AIR—WITH NO PRESSURE.

Of all the maddening things that can happen to a motorist, none is more irritating than to find that the pressure behind the supposed free air pump is taking a short vacation. Dealers who have this air pressure equipment in their garages will find that it pays to have it continuously on the job. Otherwise a piece of equipment that is supposed to draw trade is likely to drive it away.

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ANOTHER SIX CYLINDER ADDED TO RUTENBER FAMILY

It Is of the Long Stroke Type With Cylinders Cast in Pairs—Provision Made for a Lighting Generator.

Supplementing an already comprehensive line of both motors and complete unit power plants, the Rutenber Co. of Marion, Ind., the $1,350,000 company which recently took over the Western Motor Co. of Marion and Logansport, Ind., former producers of Rutenber engines, has added still another motor, Model 28, the design of which differs in several respects from all of its predecessors. Its principal point of variance lies in the fact that its cylinders are cast in pairs instead of being cast singly, the latter construction having been one of the distinguishing features of all Rutenber motors until a short time ago, when a smaller model long stroke block motor was added to the line.

The new motor is a "six," and consequently the pair method of casting the cylinders permits of the increase in rigidity which this construction affords. Incidentally, by casting the cylinders in pairs, better facility for providing more liberal bearing space between the three pairs is obtained. The crankshaft is large in section and is mounted in four die-cast bearings formed of Hoyt's nickel Babbitt metal.

In dimensioning the cylinders, the company has relied upon its own experience in the production of successful long-stroke motors, and hence has adopted a conservative ratio or stroke to bore. Like the previous four and six-cylinder motors from which the new model gains most of its features, the bore and stroke are 3¾ inches and 5¼ inches, respectively. Similarly, many of the other construction details of the new motor reflect well-known Rutenber practice.

Silence Studied in Timing Gears.

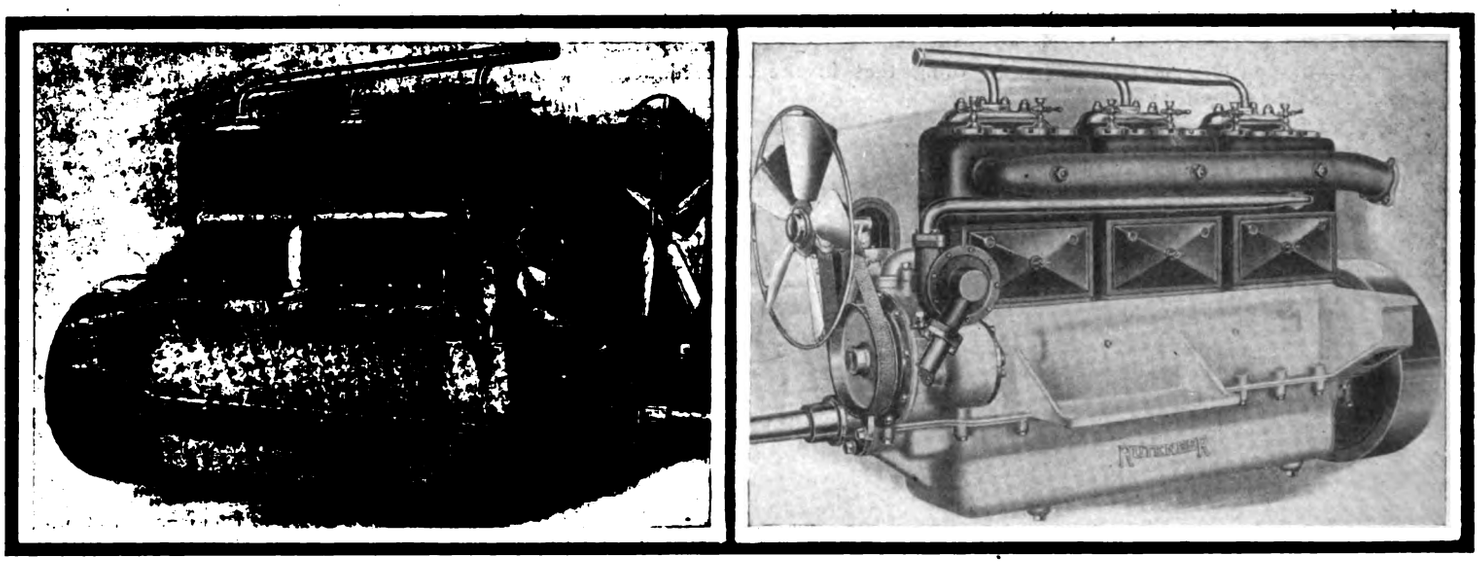
The distinctive method of arranging the water pump and magneto shaft drive from a vertical shaft, for instance, is retained, as is the centrally split barrel crankcase and the lubrication system. By reason of the arrangement of the water pump shaft and magneto shaft drive only three gears are required, and as these are helically cut and are of wide face, wear and noise are reduced to the minimum. The crankcase is split on the center line with a large oil reservoir of eight quarts' capacity in the lower half. The lubrication system is of the combination splash and force feed type, in which the cylinders and pistons are lubricated by splash and the main bearings by pressure, two cam-operated pumps being provided, one forcing oil through suitable ducts to the bearings and the other pumping oil over the timing gear train in the front of the crankcase. The overflow serves to maintain a constant level in the crankcase compartment.

Motor Has Three-Point Support.

In common with several of the other types of Rutenber motors, the new engine is supplied with two different crankcase arrangements, the one being standard with the flywheel open and the other having the flywheel enclosed in a bell housing which is machined at its after end for the reception of any one of several standard gearsets produced by several manufacturers of such mechanisms. In any case, the motor is arranged to be supported at three points in the chassis frame and the flywheel is supplied machined for either cone or multiple disc clutch. All water pipes and intake manifolds are brazed brass tubing and the valve mechanism is completely enclosed by means of light, removable metal plates, thus rendering easy valve adjustments. The motor base also is supplied equipped with a bracket for the mounting of any one of a number of standard electric lighting generators.

Cylinders Difficult to Replace.

While it is a simple enough task for one man to put on a single cylinder and get the piston rings into the bore, it is very different when it comes to handling four cylinders cast en bloc. A very good method is to block up the cylinder casting on the crankcase just above the point where all the pistons, when the cranks are horizontal, are on the same level. Then by turning the crank two of the pistons can be worked into their cylinders and the cylinders let down until the other two can be eased in without withdrawing the first two. While this sometimes can be done by two men, it can be done much more satisfactorily by three.



INTAKE AND EXHAUST SIDES OF THE NEW RUTENBER "SIX," SHOWING LIGHTING DYNAMO BRACKET

Iron Pipe for Truing Grindstones.

A rough and ready tool for truing up a grindstone consists of a piece of iron pipe, the end of which is held against the stone at a slight angle and rolled across the face of the stone on a rest. A little experimenting will quickly show the best cutting angle.

Slot Facilitates Turning of Cap-Screws.

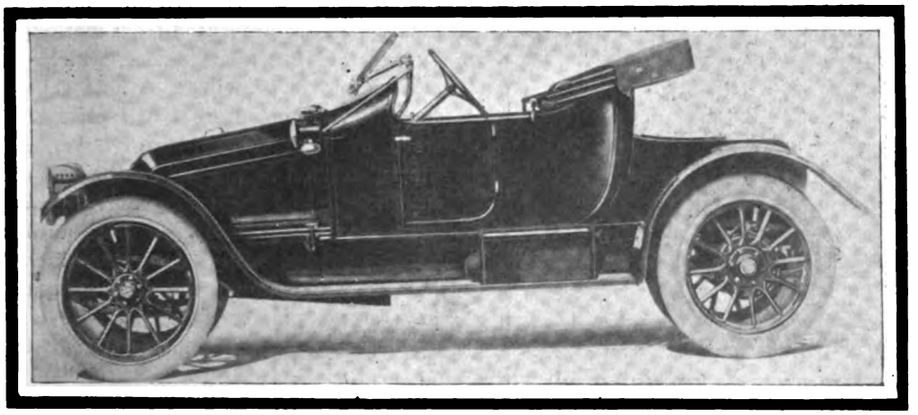
A small cap-screw that is difficult to reach with a wrench often can be turned by a screwdriver, a slot being cut in the head with a hacksaw. Such a slot should not be cut so deep as to weaken the head.

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FRANKLIN HOLDS FAST TO THE "STAND PAT" POLICY

Little Room for Improvement Found in "Series Two" Cars—Phaeton Body Constitutes Chief Element of Novelty.

Except for a few comparatively unimportant changes in the details of bodies and the addition to the line of a single new body type, the H. H. Franklin Mfg. Co., of Syracuse, N. Y., launches its cars upon the second season of series production, as opposed to the yearly model idea, without alteration. So far as the chassis of the two six-cylinder and the two four-cylinder types are concerned, there is an entire absence of anything different from previous practice; there is not so much as a bolt turned over. The details of the air-cooling system, the valves and valve-operating mechanism, the lubricating apparatus—everything has been deemed so satisfactory as to be worthy of continuation under the Franklin nameplate.



NEW FRANKLIN "LITTLE SIX" 30-HORSEPOWER VICTORIA PHAETON

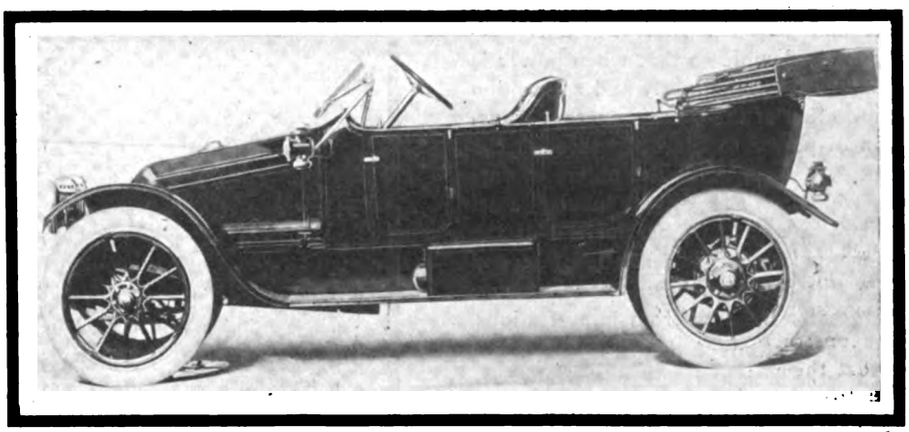
The new body, styled the victoria phaeton, is mounted on the "little six" 30-horsepower chassis, which made its initial public apeparance in January last, and which, according to the Franklin people, has proved so popular that 40 per cent. of the cars sold since that time have been built on the "little six" chassis. The new body is of the two-passenger variety, with a folding seat, dropping into the rear deck when not in use, upon which two extra passengers can be carried. The hood is of the sloping form that is characteristic of all Franklin models, and over the dashboard there is a deep, flaring cowl which swings easily into the lines of the forward part of the body; the sides and the doors are high, but there is sufficient length to the car as a whole, in conjunction with the skilful way in which the lines are worked out to avoid any of the awkward and "humpy" appearance that is apt to characterize a machine in which less designing ability is evident.

There are some slight alterations in the designs of the bodies of the model D and G touring cars—six-cylinder 38-horsepower and four-cylinder 25-horsepower, respectively, both for five passengers—which are noticeable more as general effects than as detail changes. Here there is a little rounding out and there a smoothing down of lines, the logical developments of body designs that are basically correct and need no more than gentle touches. It may be said that the result is a heightening of the effect of harmonious continuity that characterizes the bodies of all the Franklin models—a lack of any suggestion of cutting up the car into sections.

Series two consists of four chassis, the same as series one. Two of these carry four-cylinder motors of 18 and 25 horsepower, and two six-cylinder motors of 30 and 38 horsepower, respectively. The smallest chassis mounts only a two-passenger runabout body, is priced at $1,650, and its designation is model G runabout. The larger "four," like the smaller, mounts but one body, which, however, is a five-passenger touring type and is known as model G touring car; the price is $2,000. The popular "little six" is fitted with two bodies, the new victoria phaeton for two passengers and a five-passenger touring body. Both are known as M models and both list at the same price, $2,800. The biggest of the Franklins, the 38-horsepower "six," carries no less than four bodies. Model H limousine, at $4,750, and Model H seven-passenger touring car, at $3,750, each are listed at $250 less than their former prices in series one; model D five-passenger touring car and model D torpedo phaeton each are priced at $3,500. The two last named cars differ from the first only in that there is a slight shortening of the wheelbase.

A detail which comes under the head of added equipment and which tends to enhance the comfort of the occupants of the car in hot weather, when comforts most are appreciated, is the dust screen which is found in the model H limousine. The screen is placed back of the driver's seat, so that when the window is dropped dust is excluded, while the admission of air is practically unimpeded.

The well-known and successful Franklin air-cooling system, with its flywheel fan, air-jackets for the cylinders, partitioned hood and tight joints, of course remains the distinguishing feature of the car. The cylinders, separately cast in all cases, have integrally cast valve cages, avoiding possible leakage through joints. Valves are of special steel and specially heat treated in order to secure the highest possible resistance to the effects of the high temperatures to which they necessarily are subjected. All valves are in the cylinder heads and are operated by overhead gear and long push-rods. The exhaust valves, which have to withstand by far the greatest heat, are peculiar in that the steel heads are faced, on the seating surfaces, with cast iron fused on by oxy-acetylene welding; the object is to take advantage of the remarkable resistance of cast iron to corrosion and pitting and its natural lubricating qualities, due to the graphite content.



"LITTLE SIX" MODEL IN FIVE-PASSENGER TOURING CAR FORM

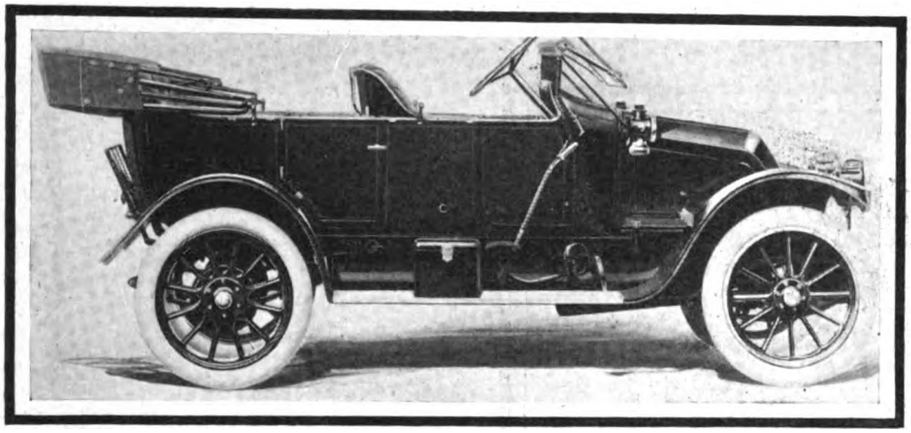
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The bearings all are of the die-cast babbit type that, originated in the Franklin factory years ago, has been in use ever since. These are made in a special department of the H. H. Franklin Mfg. Co., which also makes bearings for automobiles of other makes.

Other Franklin features are the re-circulating oiling system, with separate leads to each of the main bearings of the motor and a sight-glass on the dashboard which shows the amount of oil delivered to the motor; Franklin carburetter with four jets and a hot-air supply which can be regulated by a butterfly valve; dual ignition system with high-tension magneto and a centrifugal governor that automatically controls spark advance; drive through multiple disk clutch with bronze and steel plates; three-speed gearset and propeller shaft which is purposely made flexible so that when power is applied it will twist slightly and so cushion the application of the driving energy; transmission of power to the body through the springs of the car, with the object of further cushioning the drive; tubular steel axles, laminated ash frames instead of the usual channel steel. The ash is of second growth, this selection being made because of the greater freedom from imperfections.

The construction of the Franklin car is such that the weight is comparatively low, and the tires are large in proportion to the loads they carry. To these facts, together with the resiliency of the wood frames and the excellence of the full-elliptic springs are ascribed the easy riding qualities that these machines possess.

In the matter of equipment, Franklin cars are sufficiently taken care of so that they are ready to go on the road without extra expenditure for things that usually are needed. The headlights are acetylene, supplied by a gas tank, while the other lamps are combination oil and electric, there being a storage battery to supply the current. There is a top, with side curtains and top cover, glass windshield, trunk rack, and the usual outfit of tools and tire repair equipment.



FRANKLIN FOUR-CYLINDER 25-HORSEPOWER STANDARD TOURING MODEL

Facilitating Production of Steel Pistons.

Steel as a material for the manufacture of gasolene motor pistons offers several important advantages, chief among which are lightness and strength. A drawback, however, is found in the very considerable expense of such pistons in the ordinary way, and it is with the object of combining the good qualities of steel pistons with cheapness of production that the Oxygen Welding Co., Ltd., of Birmingham, England, has developed an ingenious system in which a welding process takes a prominent part.

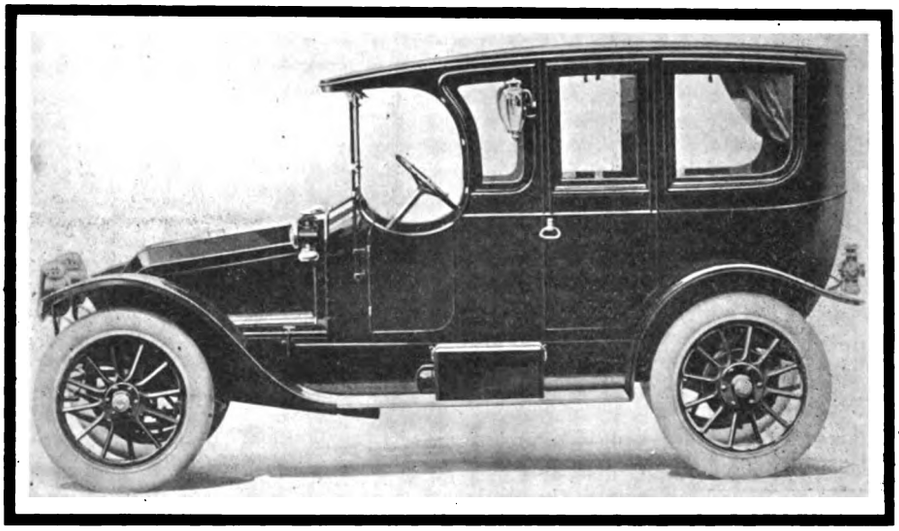
Short lengths of steel tubing are used for the bodies of the pistons. Through holes cut in the walls the piston pin bosses are inserted and welded from the outside. Steel disks are welded in to form heads, each disk having in its center a small projection by which the rough part is held in machining. After the welding has been completed the pistons are machined up in the usual way; but it is obvious that all that is necessary is to take off the roughness left by the welding and to accurately finish the working surfaces. The thickness of the tubing employed is no greater than is necessary to permit this work.

Tests of welded steel pistons, made under the hammer, are said to indicate that there is no weakness in the welded joints. The efficiency of the welding system and the low cost of the material used, notwithstanding its high quality, together with the small amount of machining required and the fact that very little material is wasted, all combine to keep the cost of production down to a low figure.

The regular stock pistons turned out by the Birmingham concern are fitted with pins which are prevented from working out by a rather ingenious device, which, however, is old in principle. A hole drilled in the pin contains a steel ball pressed outward by a fairly stiff spring. When the pin is inserted in the bosses the ball drops into a hole and the spring exerts sufficient pressure to keep the pin in place until it is sharply rapped with a hammer, which will force the ball down and free the pin. A key on the pin, engaging in a keyway in one of the bosses, eliminates the possibility of turning.

Connections as a Source of Trouble.

If an electric motor or a generator refuses to function, or runs with excessive sparking that cannot be traced to faulty brushes, incorrect brush position or other easily detected and easily remedied causes, the ends of the armature coils should be examined where they are soldered to the commutator bars, especially if the machine has been working very hard and has been unusually hot. Sometimes the solder melts and the ends of the wires are thrown out by centrifugal force, breaking the connection; and sometimes the wire itself is broken by centrifugal force and vibration.



MODEL H 38-HORSEPOWER "SIX" LIMOUSINE, WHICH SELLS FOR $4,750

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REILLY'S STANDARD FOR MEASURING SALESMEN

Making the Size of the Obstacle Designate the Size of the Man, He Advises the Sales Manager Not to Renew Contracts with Complaining Dealers —Declares No Car is Hard to Sell if Salesman is Competent.

"Rough and rocky" was sadly lacking as a term descriptive of the session into which the Sales Manager had been plunged. Three against one is not fair odds in any fight, and when the battle is one of arguments and the trio has as support for its contention certain facts which seem unanswerable, the lone man is likely to perspire mentally and wish that some good fairy would wave her wand and end the struggle. In the solitary fighter's estimation, Joshua lost much of his greatness, even though that Biblical



THE TRIO OF BELLIGERENTS DEPARTED

hero had made the sun stand still for an hour so he could have more time to fight.

Three dealers, each one of them believing himself aggrieved and the victim of adverse circumstances, were hammering hard at the Sales Manager—in fact, they had been hammering persistently for months through correspondence, and now they were gathered at the factory to find out "why the company didn't build a good car." Resolved into its real form, the demand was not for a "good" car but a "perfect" car.

Dealers Demand Better Proposition.

They said there were many objections to the line—the cars were hard to sell because people kept bringing up the bad points, their business had not been all they had expected it would be when they signed up, they knew other lines of cars that offered the same commission and that had no weak points, and if the Sales Manager didn't come across with a better discount or agree to eliminate all weak spots they did not purpose signing up for the coming year —and each of the three thumped his fist on the desk when he delivered his ultimatum.

Sales Manager Acts Cautiously.

After two hours of harrying, the Sales Manager was tempted to tell the three to hurry for a warmer clime and consider themselves "fired" as dealers, but he disliked acting rashly. The trio of belligerents were picking up their hats preparatory to departing when the telephone tinkled.

"Mr. Reilly is here," said the telephone girl from the front hall. "He wants to know how busy you are."

As the Sales Manager responded, "Let him come in," the three said they would expect a definite decision within a very few days, and the Sales Manager's sigh of relief as they left could hardly have escaped their hearing.

Reilly a More Welcome Caller.

Storm clouds on the Sales Manager's face were not exceedingly uncommon, and Reilly had long since failed to let these frowns worry him to any extent. "More trouble, sure enough!" was his cheery greeting as he dropped his hat on the desk and settled into a chair.

"Don't sit in that chair," requested the Sales Manager; "the man who just sat there is one of the most disagreeable specimens I ever met. Sit over here," and Reilly, always willing to oblige, did as he was requested.

"What's the matter with him?" asked Reilly.

The Situation is Explained.

"Matter? Everything's the matter—and the other two are just like him, only not quite so bad."

"What are they up to now?" queried the dealer.

"The same old story, Reilly; they know more wicked things about our cars than I ever dreamed existed. They threaten not to sign up for another year. They say the cars are hard to sell, because they have so many weak points. They want better cars or more money. I'd like to cancel their contracts right now, but we've had them only one season and I don't like to have it look as if I had picked out three poor dealers. I don't see what ails them. Most of the other dealers sell enough cars, and you sell more than enough, but these three claim the cars are poor sellers. I cited you as an instance, and what do you suppose the biggest and ugliest one said?"

"What?"

"He said, 'Aw, don't tell us about Reilly;



"LITTLE, LIKE THAT," SAID REILLY

I've heard of Reilly until I'm sick! He gets along because you play him for a favorite.'"

"Oh, he did, did he?" snorted Reilly. "Well, let me give you that guy's pedigree. He couldn't sell gold dollars for fifty cents apiece. He shows himself up for a little man by his own confession. He used to be a druggist, and he got along after a fashion, but as 'drugs were so hard to sell,' he quit. Now he expects to be a howling success as an automobile dealer and salesman, and blames you and the car because he isn't."

"Just what do you mean by a 'little man'?" queried the Sales Manager.

Defining the "Little Man."

"Little—like that," and Reilly held out his hand about a foot from the floor. "Don't you know," he continued, "that a salesman is measured by the number of obstacles he sees and the size they appear in his eyes.

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The big men in the sales field recognize no such things as weak points in their lines; they may know they are there, but you never could discover it from talking with them. The little man can't see anything else. The weak spots look so big he forgets that good ones exist.

"That's one of the things I casually asked that salesman of mine when I hired him. I told him before I engaged him that there were certain weak points about the cars and that they might be hard to sell, and he was willing to take a chance if I was. I never was so glad of anything as that I took that chance; he's a bird!

Avoiding Weak Points in Sales Talk.

"Weak points are something he never talks about if he can change the subject. Big, strong points are right on the end of his tongue. I've watched him sell cars; I've been where I could hear him talk, and it's a pleasure to listen to him after the weak-hearted defense some salesmen put up, instead of leading the discussion themselves and not being put on the defensive.

"I'll wager that your dealer friend who just left here hates to see a prospect come in, because he knows he is going to have the time of his life avoiding being made a monkey of. He knows there are certain weak points in our cars, and you know it and I know it. When a buyer calls, your dealer friend, instead of starting a live, red-hot argument in the proper way about why the car is a good buy, lets the buyer bring up the weak points and break up the story. Customers don't realize that it is rude to break up a salesman's argument; all they seem to think about is getting their money's worth—and generally a little more.

Psychology of the Poor Salesman.

"When a customer says our tonneau is small this dealer probably stops talking about the rest of the car and allows himself to be drawn into a discussion of this particular defect, and the more he discusses it the more pronounced it becomes in the customer's mind. One thing leads to another until what should have been a story of reasons why the man should buy the car has developed into a line of reasons why the car is a poor purchase—he doesn't tell why the car is a good one, but tries to explain why it isn't a poor one. The result—no sale. And one such experience makes the next one worse.

Obstacles Get no Recognition.

"But my salesman! Ho, you ought to see him work. He never recognizes an obstacle to selling. If the prospect brings one up, my boy makes the best answer he knows how in the fewest possible words and never gives the customer the chance to get too deeply into the argument on that point. Instead, he leads him to some feature of the car that is a ripping good proposition and hammers hard on it, and he follows it up with some more just like it. As for reasons why the cars are hard to sell, his only use for them is to find an argument that is good enough to beat them. He's what I mean by a big man—he never recognizes an obstacle as of any importance and doesn't look for reasons why the cars are hard to sell.

Physical and Mental "Six-Footers."

"It's just like men, taken physically. A brick wall six feet high is a hard thing to get over for a man who is only five feet tall, while a six-foot man would make much easier work of it. But when the little man says he doesn't give a damn if the wall is a foot higher than he is and that he's going to get over it anyway, he immediately puts himself in the big man class; see?"



"THAT DECIDES ME," HE SNAPPED

"But how," asked the Sales Manager, "am I going to get these dealers in the big man class? I can't remove the obstacles all at once, and that is what they demand, or else they want more money for surmounting them."

Small Men Who Never Grew.

"You can't get them out of their class. They've been in it too long. They grew small in the first place and never got over it."

"But they want to know at once what I am going to do," said the Sales Manager.

"For all the good they are, you might as well oust 'em," answered Reilly. "New ones couldn't be any worse, that's sure!"

"That decides me," snapped the Sales Manager. "It's what I've wanted to do, but wanted to get someone else's opinion."

When the stenographer came in answer to her bell the three letters that the Sales Manager dictated, about not renewing three certain contracts, were the red-hot, sizzling kind.

Where Electrical Instruction is Free.

Although it is not generally known to exist, for the simple reason that no effort ever has been made to exploit it, there is in Detroit a well-equipped free school and laboratory for instruction in elementary electricity and allied mechanics. It has been there for the past two years—at 1221 Woodward avenue—and is maintained by the Dayton Engineering Laboratories Co. of Dayton, O., manufacturer of the Delco combined electric lighting, engine starting and ignition system. H. E. Phillips, who is at the head of the educational department of the company, is in charge.

The purpose of the school is to instruct those who are progressive enough to seek instruction in elementary electricity as applied to automobile construction and, incidentally, to make plain the construction and operation of the Delco apparatus in a manner that will assist in its proper care and the repair of such slight troubles as from time to time manifest themselves. In addition to teaching the principles of electricity, wiring, the terms used, insulation, etc., the principles of the gasolene engine and of automobile construction also are taught, tuition in every case being free. Combined with the school there are club rooms and reading rooms, and no pains have been spared to make the school attractive. That a large measure of success has been attained in this respect is evidenced by the fact that at one time this season some 1,200 pupils were enrolled.

Minute Damage That Causes Sparking.

An electric motor or generator commutator that has been burned or abraded or has been accidentally bruised should be carefully examined to see if there are any places where the copper bridges over the spaces that are filled with insulating material. Such minute connections may be difficult to detect, but nevertheless they are capable of short-circuiting two coils and causing considerable sparking, and so should be removed.

To Reduce the Clashing of Gears.

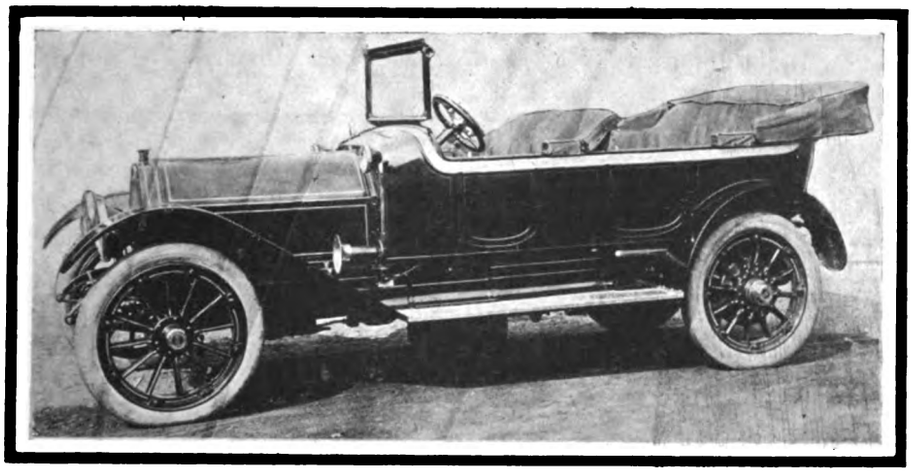
By constant use the bearings of the clutch collar and the primary gear shaft of a car are apt to become slightly loose and so permit the clutch and gearshaft to spin a good deal when changing gears; the result is a disagreeable clashing unless the parts are given time to slow down. The simplest remedy is to tighten up the clutch collar bearing and so provide a slight braking effect, which will prevent spinning.

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NEWER SERIES ALCO CARS REVEAL IMPORTANT CHANGES

Alterations Include New Clutch, New Springs and New Brakes—Electric Lighting System Added—"Fours" Abandoned.

Reflecting the experience of a number of years of successful production and marketing, the American Locomotive Co., of Providence, R. I., at length has come to the centering of its attention on the construction of its six-cylinder model, a car which nominally rates at 53.4 horsepower, but which actually develops well over 75 horsepower on test. As is but natural, the company's experence has been productive of certain standards of manufacture which are adhered to, but in the newer series of Alcos there have been incorporated a number of departures from previous practice, chief among which are the adoption of a new form of dry multiple disc clutch supported in a new manner, so that it forms with the engine a single rigid unit; the adoption of three-quarter elliptic rear springs and a general revision of the transmission system to include a new method of hanging the torsion member and several other changes of lesser import. Also, a Gray & Davis electric lighting system has been added as an item of standard equipment. The prices of the several models remain the same.



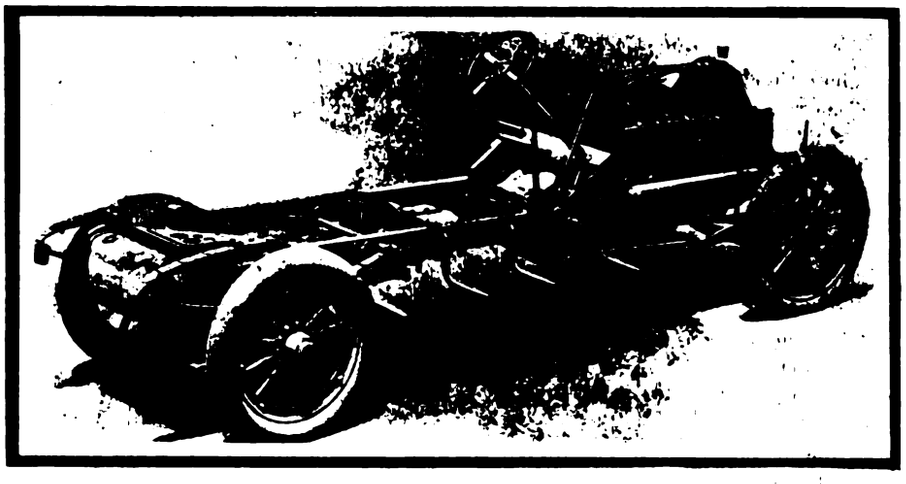
ALCO "SIX," UPON WHICH PRODUCTION ACTIVITIES WILL BE CENTERED

As heretofore, Alco bodies will be distinctive by reason of the broad white band which girdles them, which idea was original with Alco engineers, though it has been widely copied of late. Another mark, newly added, which will serve to distinguish Alco cars in the future is the adoption of a radiator emblem—a replica of the hub-cap design. Otherwise, the exterior appearance of the cars remains very nearly the same, but only to the superficial examiner. Comparison with the older series of cars reveals that the rear seat has been widened by several inches, the upholstery has been deepened to lessen the shocks incident to rough roads and the doors have been widened, and in the open cars the door handles have been relegated to a place of comparative obscurity within the body. Running boards are cleaner than ever before, the usual tool-box having been placed beneath the front of the running board with an entrance through the apron.

Supplementing the usual complement of electric lights, a large electric swiveling searchlight has been added by way of increasing the comfort and safety of touring at night. It is mounted on the cowl at the driver's side and is carried in universal joints, permitting it to be turned in any direction to reveal hidden bumps in the roadway, route signs or the landscape. The face of the searchlight is seven inches in diameter. The step light, also original in Alco construction, is retained; it lights automatically when the door is opened. In the open cars, as in the closed cars, there is a dome light in the top to facilitate the reading of road directions at night. In the Berline body, the interior lighting scheme includes Pullman berth lights set in the rear corners in addition to the dome light.

In keeping with the policy of the company in delivering its products ready for the road, the equipment is complete in the full sense of the word and includes: Windshield, top with side curtains and slip cover, illuminated 100-mile Sears-Cross speedometer, upholstery slip covers, electric lighting system, including a swiveling searchlight, trunk rack, foot rest, robe rail, tire brackets and concealed tool-box containing an assortment of tools, spare parts, etc. The closed cars have, in addition, speaking tubes and toilet cases, and the Berline is fitted with Pullman berth lights. The prices are $6,000 for the open touring car, which accommodates seven passengers; $6,750 for the Colonial limousine, and $7,200 for the Berline limousine.

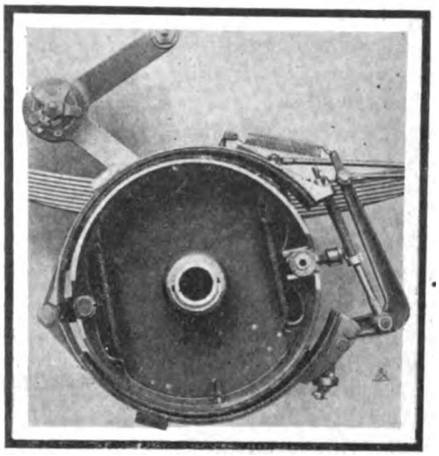
Except for a few more or less unimportant alterations which best may be styled refinements of a well tried design, the Alco motor is substantially the same creation as has given such excellent service for the past several years. Cylinders, as heretofore, measure 120 x 140 mm. (4.72 x 5.51 inches) and are cast in pairs with the valves on opposite sides. The valves are interchangeable and measure 59 mm. in diameter (2 5/16 inches); the valve port shape has been altered slightly to permit of uniform valve caps being used over both intake and exhause valves, the object being to allow the easy use of double ignition. The centrifugal water pump has been moved 2½ inches nearer the front of the crankcase to make space for the Gray & Davis lighting generator, which is driven by a straight through shaft from the timing gears.



THREE-QUARTER SIDE VIEW OF THE LATEST ALCO CHASSIS

Ignition is effected with the aid of a Bosch high tension magneto operating a dual system through a single set of spark

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ALCO DIVIDED BRAKES

plugs. An oil gauge on the exhaust side of the motor serves to indicate the depth of oil in the crankcase and a manometer on the dash gives visible evidence of the operation of the oil pump.

In the transmission elements there have been made a number of important changes, chief among which is the adoption of a new dry multiple disc clutch mounted in an unusual manner that makes it a rigid unit with the motor without impairing its accessibility. By way of attaining this valuable end, the clutch bearings are mounted in an extension of the upper portion of the crankcase, which is extended still further to enclose the clutch. The lower half of the crankcase, however, has not been extended to cover the clutch, so that the mechanism is left fairly free and is readily accessible. To exclude road dust and dirt, the lower part of the clutch is protected by means of a light, removable cover.

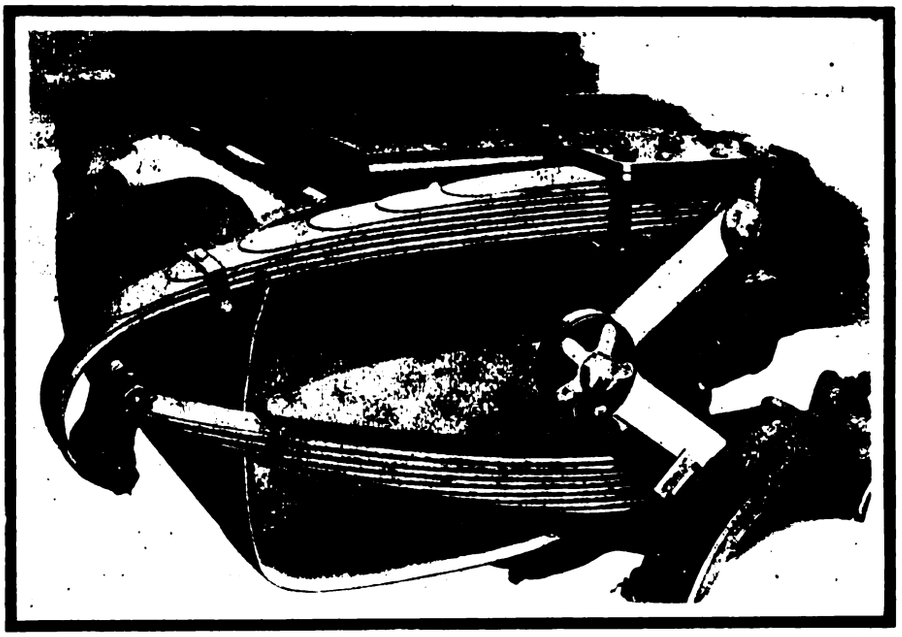
The clutch itself is of the regulation multiple disc type, employing seven driving discs faced with a friction material and eight bronze driven discs. Although the discs separate themselves readily without aid from separating springs, etc., and dragging and spinning practically is eliminated, a clutch brake nevertheless is added as a measure of precaution to ensure smooth action. Throughout the design, accessibility has been made a fetish, and to this end adjusting nuts and bolts have been so placed that they may be easily reached without the necessity for special tools. By reason of the employment of compound leverage in the clutch pedal the pressure required to release the drive has been reduced from 75 to 35 pounds. Another excellent feature is that all end thrust is taken by a large ball bearing on the crankcase.

Although the general design of the chassis frame remains the same as heretofore, it has been strengthened by the elimination of some 35 rivets and it is hung lower, thus increasing the stability of the car and ensuring a practically straight line drive. The rear springs, as previously mentioned, now are of the three-quarter elliptic variety and have been designed with particularly flat upper members in order to maintain the center of gravity of the car as low as possible. The spring suspension both front and rear has been supplemented and rendered more efficient by the addition of Truffault-Hartford shock absorbers. Coincident with the alteration in the spring suspension, the size of the tires has been increased to 37 x 5 rear and 36 x 4½ front; demountable rims are standard equipment.

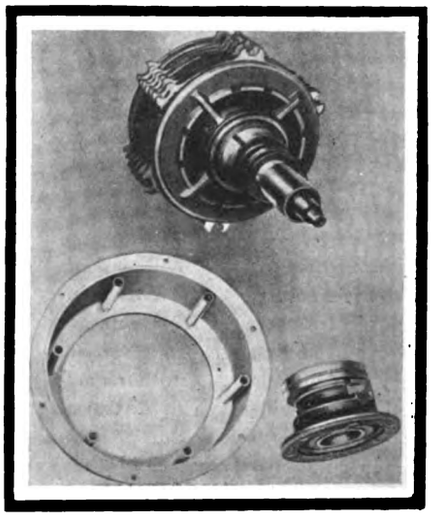
The change gear mechanism is unaltered and provides four forward speeds and reverse, selectively obtained, with the following final gear ratios: First, 10.34 to 1; second, 6.25 to 1; third, 4.18 to 1; fourth, 3 to 1; reverse, 10.34 to 1. Complete universal joints have been incorporated between the clutch and the gearset, providing for slight disalignment without deleterious results, and as they are completely housed, as is the clutch, the under pan has been eliminated. Also, a new type of universal joint has been placed between the gearset and the rear axle, which is of the full-floating type, and the radial action now is taken by this block joint instead of by the propeller shaft on a spleined surface as heretofore.

By way of eliminating the shocks incident to starting and stopping, the torque member has been swiveled at both ends, permitting an unusually free movement of the rear wheels over rough roads. The front end of the torque member is supported in a spring mounting and encased in a leather, grease packed housing. The driving shafts have been fitted with additional stuffing boxes to eliminate the possibility of grease leakage. In order to permit of steadier running on highly crowned roads and to make for easier steering, the front wheels have been slightly dished.

As a last, final improvement, calculated to render the operation of the car immeasurably safer under all conditions, the brakes have been redesigned, the brake bands, instead of being continuous, now being broken in the center to permit of a clamping action. Two complete sets of brakes are provided, both mounted on the rear wheels, the one being internal expanding and the other external contracting. Rattling has been eliminated by fastening the bands by means of a number of iron clips arranged around their peripheries. Non-burn friction material ensures smooth and efficient action and reduces the tendency to squeak as the result of quick stops.



NEW ALCO REAR SUSPENSION, SHOWING SPRINGS AND SHOCK ABSORBERS



ALCO CLUTCH COMPONENTS

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RENTAL SERVICE MAINSTAY OF GARAGE BUSINESS

Peculiar Conditions That Confront Dealer-Garagemen in Town of 5,000 Inhabitants—Revenue from Repair Shop Second to Livery Department Receipts—Car Sales Declared "Not Worth Bothering With."

Conducting a salesroom, or maintaining a garage, in a town of 5,000 inhabitants is a vastly different proposition from doing business of the same sort in a city of 500,000. Both suggest problems which are not free of knots, but in the larger community the dealer, or garageman, has at least more rope; frequently it serves only to hang him, but when this occurs it usually is the fault of the man himself. When a salesroom or garage is located in a town of 5,000 inhabitants, distant one hour from New York City itself and surrounded by the suburban homes or estates of millionaire New Yorkers, practically all of whom maintain private garages, the problem is, if anything, more complex than usually is the case, and the manner of its solution does not lack instructiveness.

Profits Which Accrue from Transients.

That it is possible successfully to maintain a combined salesroom and garage in such a place is evidenced by Koenig Bros., who, for the past ten years, have engaged in the automobile business in Tarrytown, N. Y., a short 25 miles from the metropolis itself. For five years of the ten they have operated the Old Post Road Garage, which is a structure that would do credit to almost any community. It is a thoroughly modern, fireproof, two-story, concrete, brick faced building, having also a well-lighted concrete basement.

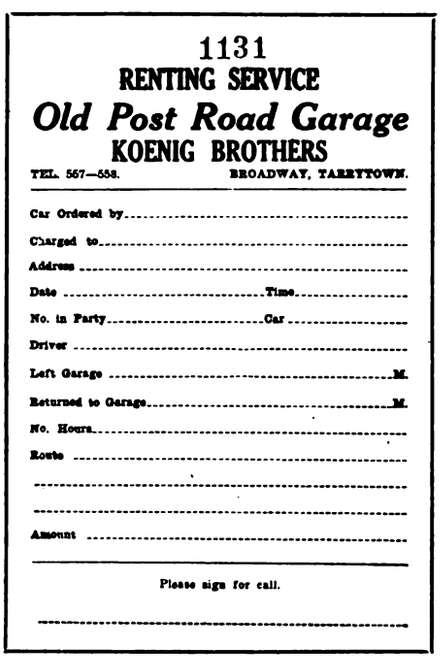
As its name indicates, it is located directly on the main line of travel between New York and Albany and Buffalo. Hundreds of automobiles pass its doors in the course of a week, which implies that the revenue derived from such transients is not inconsiderable, but such patronage is by no means the main support of the establishment. According to Frederick Koenig, but one-third of the firm's receipts is derived from these transients.

Rental Service the Best Rent Payer.

Strange to say, and supplying a straw which shows the wind's direction, the chief source of the Koenigs' revenue is their livery service, their repair shop being the next best paying department of the business. Four cars, including the demonstration car, which this season covered 17,000 miles, constitute the Koenig rental "stable." The rates that apply vary from $3.50 to $4.50 an hour, according to the car and the time of day. Although the best business, naturally, is done in the evening, little difficulty has been experienced in keeping at least two of the cars operating throughout the day.

Good Will Which Nets a Profit.

The returns from this source are considerably increased by a road map and guide of


1131
RENTING SERVICE
Old Post Road Garage
KOENIG BROTHERS
TEL. 557—558. BROADWAY, TARRYTOWN.

Car Ordered by.....
Charged to.....
Address.....
Date.....Time.....
No. in Party.....Car.....
Driver.....
Left Garage.....M.
Returned to Garage.....M.
No. Hours.....
Route.....
.....
.....
Amount.....

Please sign for call.

.....

KOENIG BROS. RENTAL TAG

Westchester County which Koenig Bros. have issued as a means of advertising their establishment and through which the goodwill of the different taverns and hotels has been earned because of mention made of them. The bonifaces usually reciprocate by recommending the Koenig service whenever opportunity offers.

"Rescue Service" that Works Both Ways.

In addition, the Koenigs advertise, in a limited way, in the local prints, and also have most of the roads leading to Tarrytown fairly well posted with their signs.

Their "rescue service" likewise turns more than a pretty penny into their coffers in the course of a twelvemonth. The service comprises a "rescue wagon," which is an old chassis fitted with an open commercial body in which are stored jacks, block and tackle and the necessary tool equipment for rendering first aid to a disabled machine. It is at all times kept ready for instant response to telephone calls.

Sales End not Over-Profitable.

The Koenig brothers—there are two of them—are agreeable men and, save in one respect, the lay-out of their building and the conduct of their business is in keeping with the attractive appearance of the structure itself. The sale of cars is extremely limited—the Koenigs have disposed of but four Abbott-Detroits, for which they are agents, during the past year—and they frankly state that the profits from sales of cars makes their sale "hardly worth bothering with." The size of their town does not justify carrying a stock of new cars, and as a result they employ merely a demonstrator which, as stated, also does duty in livery service.

Even the "Dead" Cars Presentable.

The first floor of the garage is devoted to storage of cars, and even a casual visitor cannot but be impressed by the fact that all of them present a well-kept appearance. Remarkable to say, a number of the cars have been kept on dead storage during the entire summer, and why this should be the case, Nicholas, the younger of the brothers, admitted he did not know, unless it was due to the fact that this is "a Presidential year." But even the dead cars are kept presentable at all times. They are washed and polished whenever the employes have little or nothing to do, "just to keep their hands in," remarked the younger Koenig.

Fire Apparatus a Drawing Card.

Occupying a prominent place immediately inside the entryway is a most unusual feature of a garage—a large, modern, automobile fire engine. It belongs to the Tarrytown Volunteer Fire Department and its appearance behind one of the two large show windows rarely fails to attract attention to it. The Koenigs themselves are members of the fire department and most of the other enthusiastic "vamps" who are competent to operate the machine make it their business to remain in the vicinity whenever possible. Incidentally, the Koenig Bros. are paid $15 a month for storing the formidable piece of fire apparatus.

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Perhaps because of their interest in such matters the Koenig garage is otherwise unusually equipped for fire prevention, or fire extinguishment. There are ten approved hand fire extinguishers attached to as many pillars throughout the place.

Shop Equipment Not Lacking.

All repair work is kept absolutely free of the garage—that is, the main floor of the garage—a runway in a rear alley affording a ready means by which a car may be taken into the machine shop, which is located in the basement. The latter is well equipped, considering the size of Tarrytown. It includes a large lathe, a drilling machine, a forge, a power hacksaw and a more than ordinarily complete assortment of tools. The machine equipment is operated by electric power and utilizes the services of three men. In addition, there are two vulcanizers of size sufficient to retread tires of even the largest diameter, as well as several smaller vulcanizers for the repair of inner tubes and small abrasions on casings. Two men are employed for the vulcanizing work, which is one of the profitable ends of the business.

REPAIR JOB STOCK REQUISITION
Old : Post : Road : Garage

Job No.____ Name____ Date____ No. 446

TO STOCK KEEPER : Issue to Bearer the following and charge to job number above.

C'k	Quan	Description	Price

Delivered by____ Received by____

RETURN THIS ORDER TO OFFICE AS SOON AS STOCK IS ISSUED

KEEPING TRACK OF PARTS REQUIRED FOR REPAIR JOB

REPAIR INSTRUCTION ORDER
Old : Post : Road : Garage No. 1272

Date____ Name____
Car Name____ Street____
License No.____ City____
Car No.____ Tel.____

DESCRIPTION OF WORK

REPAIRS ORDERED BY	APPROVED BY

This Order must be returned with of work or at close of day. — *Time Card to office on completion*

CARD THAT ACCOMPANIES CAR INTO REPAIR SHOP

Card Systems in Repair Department.

And in the rental and repair departments, as well as in the selling and renting end of the business, systematic methods are followed. There is a rental tag, and to the tires or tubes received for repair are attached tags which bear all necessary details, as shown by the accompanying illustration. Each tag is separable, the first section being given to the owner as a receipt upon delivery of the tire to the garage; the second one goes to the bookkeeping department, and the third, which remains on the goods, is returned to the owner when he surrenders the original receipt. Naturally, the head of the tire repair department fills out the work which was done. A similar system is followed in the machine shop, save that three cards are used—an instruction card to the workman telling him just what is to be done on the car in question, a stock requisition card which is presented to the stock clerk when the workman has ascertained the materials which will be required, and a time card which accounts for the time consumed by the work in hand—all of which are filed in the bookkeeping department.

Accessories Out of Public's Sight.

The stock of accessories which is carried is unusually complete. It is valued at between $3,000 and $4,000 and embraces everything from the smallest cotter pin up to tires, magnetos and storage batteries. The tires carried in stock include all sizes, from 28 x 2½ up to 38 x 5. Remarkable to relate, however, the accessories are dis-

STOCK ROOM ORDER No.____ | **TIME CARD** Old : Post : Road : Garage | INSTRUCTION ORDER No.____

CAR OWNER	MECHANIC	HRS	RATE	AMOUNT	WORK BEGUN
CAR NAME	HELPER				

DESCRIPTION OF WORK.

WORK FINISHED

This Card must be Returned with Instruction Order to Office on Completion of Work or at Close of Day.

Approved by____

CARD THAT KEEPS ACCOUNT OF LABOR EXPENDED

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played where callers or passers-by cannot see them, which appears to be the one blemish on an otherwise well-conducted establishment. They are kept on the second floor, where the Koenig office also is located. In explaining the failure to display them on the ground floor, or in the show windows, where they must be seen by everyone who enters the garage and by most of the hundreds who pass the place, Frederick Koenig smiled and gave a reason for the upstairs location that likewise is unusual.

"We used to keep a showcase of accessories downstairs," he said, "but so many young fellows dropped in and occupied the time of the girl who was in charge of it that we simply took the bull by the horns and placed the showcase upstairs, where the whole stock is kept."

The sale of gasolene is considerable, but for some reason or other, and despite the favorable location of the garage, the sale this year decreased from 45,000 gallons to approximately 25,000.

"Baths" that Facilitate Repair Work.

When an automobile is taken to pieces for repair, much time and unnecessary labor can be saved by a methodical examination of such parts as are disassembled. The first requirement is to thoroughly clean every part, no matter how minute. There are several ways of performing even such a simple task.

The average repair man can make use of a wide, open metal vessel and use kerosene and gasolene mixed, to cut away the heavy grease and dirt, after which a small quantity of gasolene should be used to make the "bath" thorough. If hot water or a steam jet are available, many parts can be washed without injury—such, for instance, as crankcases, cylinders, gearboxes and gears. But for large shops and service stations a salt bath capable of being heated to high temperature will quickly dissolve all grease and dirt when the parts are immersed therein. The grease will rise to the surface and can easily be skimmed.

Unless certain parts, especially aluminum parts, are well rinsed afterwards, the alkali will have an injurious effect on the metal; to counteract such effects a second bath containing a weak solution of nitric acid is advisable, as it will remove the salt and promptly nullify its injurious action on the aluminum.

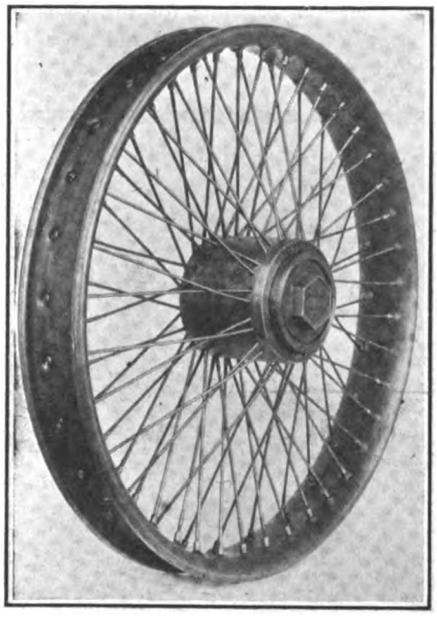
Threads for Brass and Steel Differ.

Should it become necessary to put brass screws, nuts or bolts in place of iron or steel ones, the threads should be examined to see if they are of the same pitch; usually brass threads are finer than those cut in iron or steel.

SIMPLICITY IN DESIGN OF E-C REMOVABLE WIRE WHEEL

Only One Removable Part and Unusual Arrangement of Spokes Its Chief Characteristics—Diminutive Hub Employed.

Emphasizing the already well defined trend toward wire wheels, the E-C Sales Co., of 332 La Salle street, Chicago, Ill., which some little time ago brought out a demountable artillery wheel, which was illustrated and described in the April 4th issue of Motor World, has added a demountable wire wheel which partakes of several of the features of its wood predecessor.



E-C DEMOUNTABLE WIRE WHEEL



CONSTRUCTION OF HUB

The wheel is distinctive both by reason of the treatment of the spokes and the construction of the hub portion, neither of which is exactly like anything else of the kind. As may be seen by the accompanying illustration, the spokes are so arranged that they cross over from the inside of the hub to the outside of the wheel rim and vice versa, which construction, it is pointed out, materially strengthens the wheel and minimizes the possibility of end play and the danger of collapse due to unusual strains imposed in rounding corners at high speed. The rim is of the clincher type and is designed to accommodate but one style of tire.

As is the case with the wooden wheel marketed by the same company, the wheel itself is the only part which is demountable and there are no loose parts to be lost on the road or mislaid when shifting wheels. Mounted in the hub of the wheel and visible in the picture showing the complete wheel there is a movable ring with a small hole at its upper and lower extremities. With the aid of a spanner which fits into these holes, the ring may be unscrewed, which action loosens a sleeve within the hub and permits the removal of the wheel. The movable ring and the sleeve both are attached to the wheel portion of the hub and come away with it.

The axle portion of the hub is hexagonal in shape, with rounded corners, and is tapered to permit of adjustment for wear and to ensure positive keying and rigidity. By reason of the construction, the hub is unusually solid, and, it is claimed, will withstand without impaired efficiency an amount of abuse that is truly extraordinary. Another feature to which attention is directed is that the comparative narrowness of wheel and hub render easier its mounting on running boards or at the back of the tonneau, where space is restricted; there are no projecting parts to be knocked and injured or to catch on other projections.

Bent Valve Stems Beyond Repair.

Occasionally the suggestion is made that a valve stem which is bent should be straightened before being used again. While it may be within the bounds of possibility to do such a thing and do it satisfactorily, it is far outside the bounds of probability. A bent valve stem, even if the deflection is so slight as to be imperceptible, is sure to cause abnormal wear of both itself and its guide, and it is almost impossible to grind such a valve to a seating that will remain tight.

Dust that Gathers in "Dust-Proof" Cases.

Because an electric motor or dynamo is completely enclosed, so that it is impossible for dust and dirt to work in from the outside, it does not follow that the interior will be free from dust. On the contrary, the gradual wear of the brushes and the slower wear of the commutator produce a dust that is more or less abrasive and also is a good conductor of electricity.

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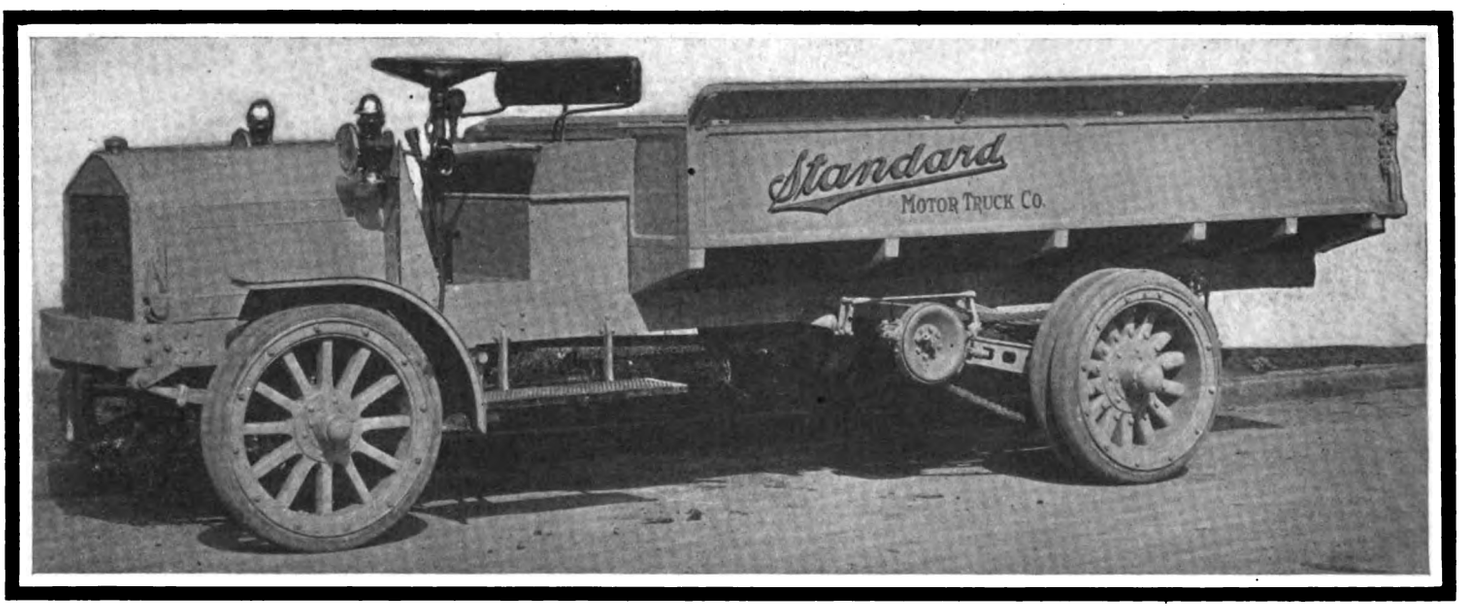
STANDARD TRUCK STANDARD IN CONSTRUCTION AS WELL

Power, Transmission and Other Units the Products of Recognized Parts Specialists—One Capacity But Many Sizes.

Taking several leaves out of other books in which the word standard is defined to mean the use of parts the manufacture of which in large quantities by recognized specialists has made them to all intents and purposes standard construction, the Standard Motor Truck Co. of Detroit, Mich., which is a newcomer in the commercial vehicle field and is headed by Howard Wilcox, whose name and fame as a racing driver are known far and wide, has brought out its initial product—the Standard truck.

As the name of the vehicle serves to indicate, there is absolutely nothing radical or experimental in its make-up; smaller parts and transmission and power units are of well-tried design and construction, and particular pride is taken in the fact that the names of the manufacturers of these parts stand for all that is good and proper in automobile construction and are well known almost wherever self-propelled vehicles are used. The motor, for instance, is a Continental, manufactured by the Continental Motor Mfg. Co.; the axles and jackshaft bear the mark of the Timken-Detroit Axle Co.; the gearset is the product of the Brown-Lipe Gear Co.; the steering gear is by the Gemmer Mfg. Co.; the springs are made by the Perfection Spring Co.; and so-forth throughout the whole of the vehicle. The assembling and final testing and guaranteeing is done by the Standard company, of course, and, needless to add, each separate part bears also the guarantee of the individual manufacturer.

Preferring to center attention on the production of a single model, the Standard is made in but one capacity—6,000 pounds—though by reason of wide variety for choice in the length of the wheelbase, which may be either 10, 12, 14 or 16 feet, the available loading space may be made suitable for a large number of trucking requirements. The standard length of the frame back of the driver's seat is 12 feet 3 inches. The weight of the standard chassis is about 6,100 pounds, and it lists at $2,750. Other frame lengths, suitable for the transportation of furniture, lumber and poles, etc., add $50 to the list price.



THREE-QUARTER VIEW OF STANDARD THREE-TON TRUCK, WHICH LISTS AT $2,750 WITHOUT THE BODY

The motor is the well-known Continental vertical L-head type with the gearset and clutch contained in an extension of the crankcase, making of the whole power plant a single rigid unit. Cylinders are cast in pairs and measure 4½ x 5½ inches, bore and stroke, respectively. By way of increasing efficiency and reducing the depreciation due to excessive speed, the motor is fitted with a positive throttling governor which may be adjusted to permit a maximum motor speed of from 600 to 1,000 revolutions a minute, the speed varying according to the class of work for which the vehicle is intended and the contour of the roads over which it will be run. Final gear ratios also may be adjusted to suit requirements, no less than eight different ratios being available; they may be altered quickly and easily after the truck has been placed in service. A high tension Eiseman magneto with automatic advance serves for ignition and a Stromberg carburetter furnishes "mixture."

As is the case with the majority of modern vehicles, accessibility has been made one of the keynotes in design. The jackshaft is simple and rugged in construction, with the differential and bevel gear drive contained in a pressed steel housing to which access is gained through a removable cover plate. Power is transmitted through the intermediary of a multiple disc clutch and a three-speed, selectively operated change gear mechanism. The clutch is of the dry plate type and is completely enclosed. Final drive is by means of side chains.

In the tire equipment, liberal provision for the inevitable overloading has been made. The tread of the front wheels is 65 inches, with 36 x 5 solid rubber tires, and is so proportioned that the front wheels track with the inner dual rear tires, which also measure 36 x 5 inches. The tread of the rear wheels at the outside is 71⅛ inches. Another excellent feature is that the wheels are made according to S. A. E. standard dimensions and may be fitted with any standard demountable rims. The front wheels have 12 2½-inch spokes and the rear wheels have 14 3½-inch spokes the length of which between the hub and the felly is but 6½ inches. The services brakes are operated by a pedal and are of the external contracting type mounted on the outer ends of the jackshaft. The emergency brakes are internal expanding, acting on 18-inch pressed steel drums mounted on the rear wheels, and are operated by means of the orthodox hand lever.

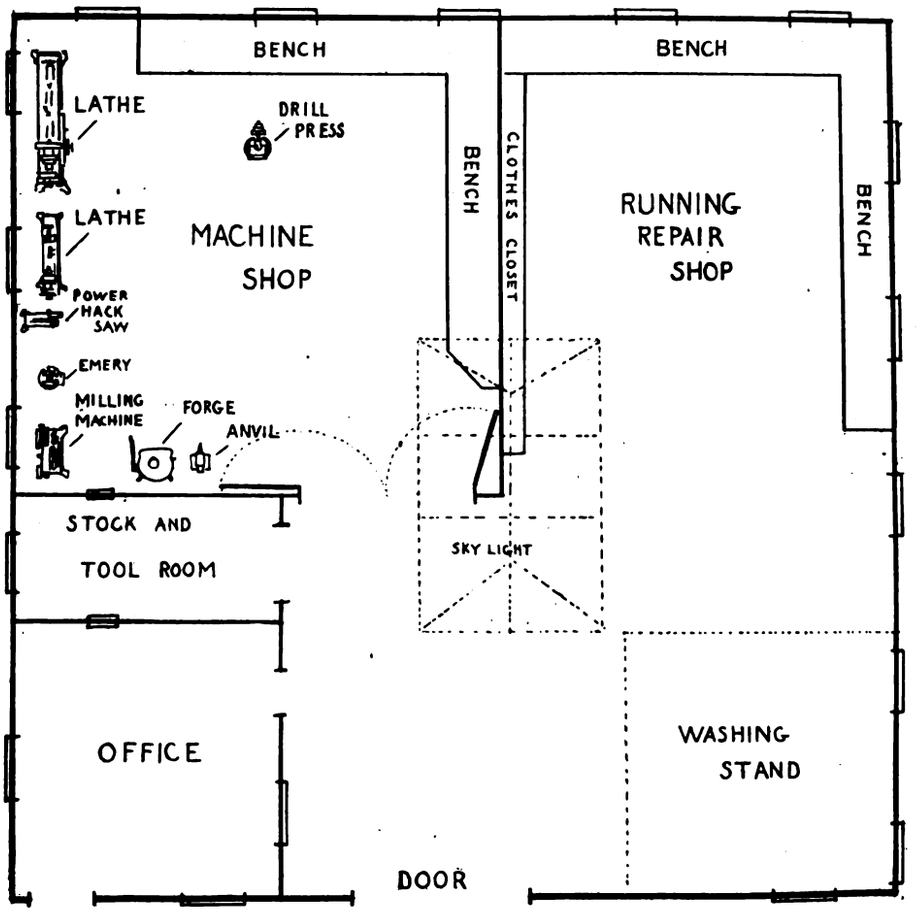
Following the tendency toward left-hand drive, and to obtain the advantages which accrue under that system of construction, the steering wheel is placed at the left side.

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LAYING OUT AND EQUIPPING A REPAIR SHOP

Careful Planning That Brings Cash Returns—Facilitating Work by Dividing Cars Into Classes—Quality, Quantity and Cost of Machine Tool Outfits for Various Requirements; Second-Hand Machinery.

In the days when all tools were more or less crude and a great deal more depended upon the laboriously acquired skill of the mechanic than upon the implements of his trade, someone invented the saying which infers that man who turns out an indifferent piece of work and then blames the tools for the shortcomings of the job is a bad workman.



FLOOR PLAN FOR ONE-STORY MODEL REPAIR SHOP

Good Tools that Produce Good Work.

The relative status of men and equipment has changed greatly since that proverb was created, for no matter how skilled may be a mechanic, he cannot do work that will come up to the standards of the present time with poor tools and, per contra, good tools enable many men who are comparatively unskilled as mechanics to turn out work that would be considered miraculous by the venerable sage who first uttered the almost worn-out proverb. All of which applies directly to the automobile repair shop which is called on to do a great deal of work that is useless if not accurate, and which depends for its excellence more upon the tools than upon the men who wield them. There are many classes of work which cannot be properly done even by the most highly trained mechanics without first-class tools.

In the laying out and equipment of an automobile repair shop it is of the greatest importance that cognizance should be taken of the fact that good tools are essential to good work; further, that the quality of the work frequently is limited by the quality of the tools, be the mechanics never so skilful. This, of course, applies particularly to machine tools, which primarily are tools of precision. And all conditions that affect the operation of the machines are liable to affect the quality of the work done. Therefore, the machines should be placed where they will be well lighted; they should be driven by power that is ample to maintain proper speed even if all the machines are in use at the same time; they should be accurately lined up and leveled and mounted on good foundations; and they should be properly used, properly cared for and properly repaired and adjusted when repairs and adjustments are required.

Time that is Saved by Saving Steps.

Once the machine tools are placed, they are, of course, fixtures; any work that is to be done on them must be brought to them. As some of the parts that may require machining are heavy, time and trouble can be saved by so laying out the shop that a car having in it heavy parts requiring work done on them can be brought close to the place where the work is to be done. One man's time walking across a shop from a car to a machine and back again does not amount to a great deal; but if several men do this every day for a month or a year the aggregate will be far from inconsiderable. A heavy part often can be swung across a narrow space by a couple of men in a few seconds, whereas the transportation of the same part across the shop would necessitate loading it on a hand truck, wheeling it over, dodging whatever obstructions might be in the way, unloading it from the truck and repeating the operation upon the completion of the work. For this reason it is economical to place machine tools in such positions that cars can be brought fairly close to them; the traverse from the car to the machines most likely to be used should be as short as possible.

Making the Most of Floor Space.

Not the least important part of the process of establishing a repair shop is the working out of the floor plan in order to make the most of the available space and to economize in the time of the men. The accompanying illustrations shows a floor plan that is suitable for a shop of moderate size, fitted up with a good equipment of tools and arranged to permit the proper distribution of cars without confusion. This ship is approximately 50 feet square, one

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story only, with plenty of windows and a large, light skylight in the roof. The building is divided into four sections; on the left of the entrance is the office, and adjoining it the stock and tool room; on the right is the washing stand. The rear half is occupied by the machine shop on the left and the running repair shop on the right, the latter being open to the space at the front of the building, so that cars can be driven into the building. Wide doors give access to the machine shop from the space at the front.

Classifying Repair Work.

The object of having a running repair shop separate from the machine shop is to provide a place for cars that require only light work done on them, such as the overhauling of the ignition apparatus, grinding in a set of valves and other work requiring no machine tools. This leaves the machine shop free to deal exclusively with machines that need more or less extensive repairs involving a good deal of machine work. Such cars are taken into the machine shop and stand close to the machines, so that all long "carries" are avoided. By reference to the illustration it will be observed that there is space for a car on each side of the drill press. If a motor is to be removed from a car it can be placed on a bench by a very short lift, or any part can be taken to a bench or direct to the machines most likely to be used—the lathe or drill press—with very little expenditure of time and trouble. The machines most frequently used are placed in the most convenient positions, and all are abundantly lighted from the windows; the forge and anvil, which need the least light and are used comparatively infrequently, are furthest from the windows. The running repair shop is equipped with benches, vises and ordinary bench tools; all the benches are lighted by windows.

Equipping the Machine Shop.

The office location is such that incoming and outgoing cars can be observed through the window in the partition. Between the office and the machine shop is the stock and tool room; a small window affords communication between the two rooms and a window at the opposite side of the stock room opens into the machine shop. Naturally the machine shop will make the most frequent demands upon the stock room; therefore the two are placed in convenient proximity.

From the entrance a car may be driven direcly into the machine shop, the running repair shop or the washing stand, as may be required. There is no possibility of the inconvenience and bother that is caused by the necessity for washing a car in the repair shop proper; the water and mud are confined to one corner of the place.

Coming to the very important matter of the items of equipment of the machine shop, it may be said that the outfit shown in the accompanying plan is sufficient to cope with practically anything that is likely to turn up in the repair line; a shop so equipped would be suitable for a town of considerable size, and would by no means be out of place in any of the larger cities. The tool equipment suggested includes a large lathe with a gap bed, with sufficient clearance to permit the handling of a flywheel; a small speed-lathe, an emery grinder, a power hacksaw, a fairly large drill press, a small milling machine, a forge, and an anvil. The usual quota of vises, pipe vises, tool racks and so on are taken for granted. A single line of shafting will serve the countershafts for all machines requiring them. The big lathe and the drill press will be used more frequently and for heavier work than the other tools, and so are most conveniently placed.

Electricity as the Motive Power.

The ideal method of driving the various machines undoubtedly is by individual electric motors, each machine having its own small motor with separate starting switch. From an operative point of view this is the best arrangement, and it also is the most advantageous from the point of view of economy in the use of electricity. The expense of installation is very considerable, however, and it is more likely that the average shop will drive from one large motor with the usual shafting arrangement and belts. Under all ordinary circumstances electric drive is most likely to be employed. In order to economize floor space the motor will be mounted overhead—a very common and very satisfactory arrangement.

In a locality where the charges for electricity are high, it is a good idea to run the shafting in roller or ball bearings. The expense of this is not excessive, and the amount of power saved often is surprising, especially if the shafting is not hung with perfect accuracy or if the building is inclined to sag and throw the shafting out of line.

Machine Tools and Their Cost.

The cost of the chief items of equipment for a repair shop of the character and capacity of the one outlined is capable of considerable variation, according to the owner's ideas as to what is needed in his particular locality or what machinery will handle the class of work he may have his eye on. Assuming, however, that the shop is to be equipped as indicated in the illustration, and that the machine tools are to be of good, substantial construction, not excessively high-priced on the one hand, and not of the kind in which essential features are sacrificed for the sake of reducing the cost on the other hand, the expense will be about as follows: Gap bed lathe to swing a flywheel in the gap and take a crankshaft between centers, $375. Back-geared drill-press, $125. Plain speed lathe, 9-inch swing, with hand rest and countershaft, $50. Emery grinder, to take two 12-inch wheels, $30. Milling machine, $250 Power hacksaw, $22. Forge and anvil, $25. Total, $877.

When Cost Must be Kept Down.

If closer estimates are necessary the figures may be lowered considerably by substituting for the gap lathe a straight bed machine of say 14-inch swing costing about $250, and for the 9-inch speed lathe an 8-inch lathe at $30. A smaller emery grinder can be had for $22, drill-press for $75 and forge and anvil for $20. A shaper as a substitute for the milling machine will cost $125. This totale $522, or $355 less than the first list, and the total may be still further reduced by the omission of the shaper.

It is for the owner of the shop to decide for himself whether he can afford the cost of the complete equipment, or, looking at the matter from another angle, whether the jobs that could be handled with the more complete equipment but not with the other would justify the investment. It may be said that in any good-sized town where there is a rather wide range of work, it is highly probable that the better equipment would prove to be a profitable investment. It is rather discouraging to would-be patrons to be told, "I'm sorry, but our lathe isn't big enough to swing that wheel," or, "That's a job for a milling machine or a shaper, and we haven't either in the shop," and so on.

How a Complete Equipment Pays.

Nine times out of ten a man who takes such a job to another shop takes the next one there, too, so that the mere possession of a good equipment of tools may bring in considerable business of a general character. It does not take very long for a shop to get a reputation for being able to perform any job, even if it is of an unusual character. Everyone who is at all familiar with repair work has heard some such remark as, "Oh, I know what you can do; take it around to Jones's shop. They do lots of things like that," when a question arises as to who shall do a difficult piece of work.

A smaller shop can be maintained with considerably less machinery, though it goes without saying that cutting down the equipment means that the variety of work that can be performed is reduced and that cer-

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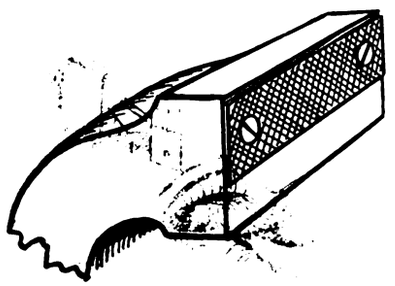
tain jobs must be refused or part of the work must be farmed out to other and better equipped establishments. A decided objection to this plan is that the man who pays the bills is called upon to pay two profits on the work that has been farmed out, unless the "farmer" cares to remit his share of the profit, which is not very likely. The usual equipment of a small shop is a lathe, drill press, emery grinder, and perhaps a power hacksaw; of course, there are plenty of places that make shift to get along with only a lathe, using it for everything from milling to tool grinding, including drilling. Such "shops," however, cannot be said to count very heavily in any way. But with a good lathe of not less than 12-inch swing, a drill press that will drive a ¾-inch drill, an emery grinder and a power hacksaw a great deal can be done. The cost of this outfit will be in the neighborhood of $350.

It often is possible to obtain second hand machine tools of really good quality and in good condition, and by so doing the cost of equipment can be very considerably reduced. It is absolutely necessary, however, to have second-hand machine tools carefully examined by a machine tool expert, for there are many possible defects that would not be detected by an inexperienced person. In the larger cities a little "browsing" very often will disclose bargains, if time is taken to seek out the right tools and the seeker is not content to accept something that is not suitable merely because it is cheap. A first class machine, properly taken care of, is not easily worn out and often is practically as good as a new one. But the chief trouble with second-hand tools is inaccuracy, and this should be watched for with care.

Renovating Old Vise Jaws.

After an indifferent vise has been in use for some time the inside faces of the jaws become so highly polished that if any round piece of metal is inserted it invariably slips unless the jaws are tightened unduly, which failing may be overcome by interposing a file between the work and the faces of the jaws. The accompanying illustration shows how a file can be attached to the jaws of the vise permanently, or until such time as it is no longer useful for the purpose intended.

The jaws of most vises are hardened and some difficulty may be experienced in drilling them, but if the drill point is sufficiently hardened and turpentine is used as a lubricant, the operation can be performed with the exercise of a little patience. There is no necessity to use new files, as those that have passed the stage of ordinary utility answer the purpose just as well. Before the file can be drilled it must be softened, and as there are always a sufficiency of old files available in most shops there is no necessity to reharden them.



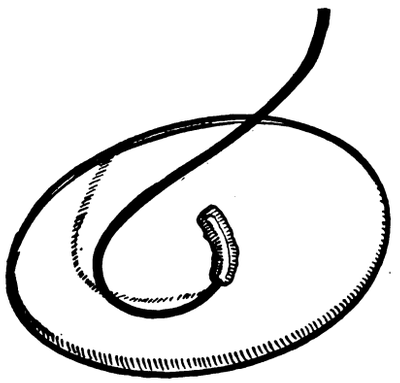
FILE FACED VISE JAW

Rubber Sleeves that Prevent Chafing.

Insulated wire and rubber gas tubing frequently are passed through holes in sheet metal and so are in more or less danger of chafing. This can easily be prevented by slipping over the wire or the tubing, as the case may be, short pieces of heavy rubber-and-fabric tubing held in place by a little rubber cement. In extreme cases fiber tubing should be used to take the wear. It goes without saying that it always is best to remove the cause of the trouble, but if this cannot be done the next best thing is to guard against the effects. It is cheap insurance against trouble.

Making Visible Inaccessible Parts.

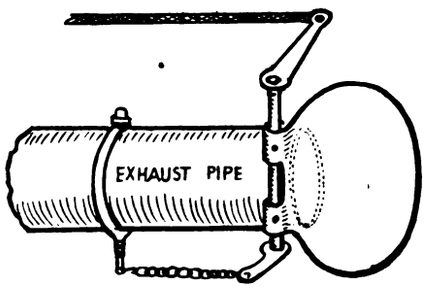
Despite the fact that accessibility rightly has become a fetish and there are few parts in the modern automobile that cannot be reached quickly and easily, it is not always easy to see the work in hand or to make quick inspections without removing part of the body-work or the pan beneath the engine. In such cases, a small mirror forms a valuable adjunct to the repair man's kit, and it is comparatively simple to equip one for such uses with the aid of a piece of soft copper wire and some solder. The wire should be fairly heavy, about eight or 10 inches in length, and should be soldered to the back of the mirror. The flexibility of the wire permits it to be bent in almost any shape, in order to reach out-of-the-way places and obscure corners, while at the same time it is stiff enough to hold the mirror firmly. With a mirror wired in this way, it is a simple matter to explore the whole of the inside of a crankcase, for instance, provided the crankcase is fitted with inspection plates, of course. It is not difficult to increase the practicability of the device still further by attaching to it a small electric light operated either by a dry battery or by current from the electric system on the car.



WIRE HANDLED MIRROR

Getting Pressure on the Gasolene.

No matter where the air pressure hand pump is situated, so far as the driver is concerned, it always is an unpleasant undertaking to have to apply pressure while the automobile is in motion. There are, however, several ways of obtaining initial pressure with little trouble, but this cannot be said to be true while the car is in motion. The running of the car is dependent upon a minimum pressure being maintained and in many cases this is effected by passing part of the exhaust gases through a compensating valve. This valve needs constant attention, and should foreign matter find its way under one of the valve seats a leakage will result, perhaps sufficient to starve the carburetter of gasolene and seriously affect the running of the motor.



TO OBTAIN EXHAUST PRESSURE

By closing the outlet of the exhaust pipe with a small clappet valve, such as is herewith illustrated, and actuating it by a cord from the driver's seat, no matter how much the valve may leak it is possible to maintain several pounds pressure with a minimum effort.

Two bent wire hooks can be provided, one allowing the valve to be held open by the spring and the other so that the orifice of the exhaust pipe is partly closed. This point must be found so that some pressure is delivered for maintaining a head of gasolene, but not so much as to cause back pressure on the motor sufficient to result in loss of power.

Completely closing the orifice for a few seconds suffices to rush the pressure up if it shows signs of giving out.

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ELECTRICITY AS AN ILLUMINANT MADE PLAIN

Limitations of the Old Proverb Concerning Letting Well Enough Alone Pointed Out in Their Application to Electric Lighting Systems—When Attention is Needed and Where—Battery Location Discussed.

(This is the seventh of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render easier their care and repair by dealer and owner alike.)

Like many another old saying that has done duty almost since time immemorial, "Let well enough alone" has its limitations and is susceptible of wide interpretation. It is to be assumed, of course, that in the majority of cases where the quotation is put to use, the "well enough" part of it signifies that the object to which it applied really is "well enough" in the true sense of the words—that a device or a mechanism is functioning properly, for instance, and giving no indication of derangement. In this case it is good policy to let it alone. The difficulty, however, particularly to the layman, is to determine just when "well enough" fits the case, and in this connection the operation of the electric lighting system forms an excellent example in point.

Where Astuteness is Required.

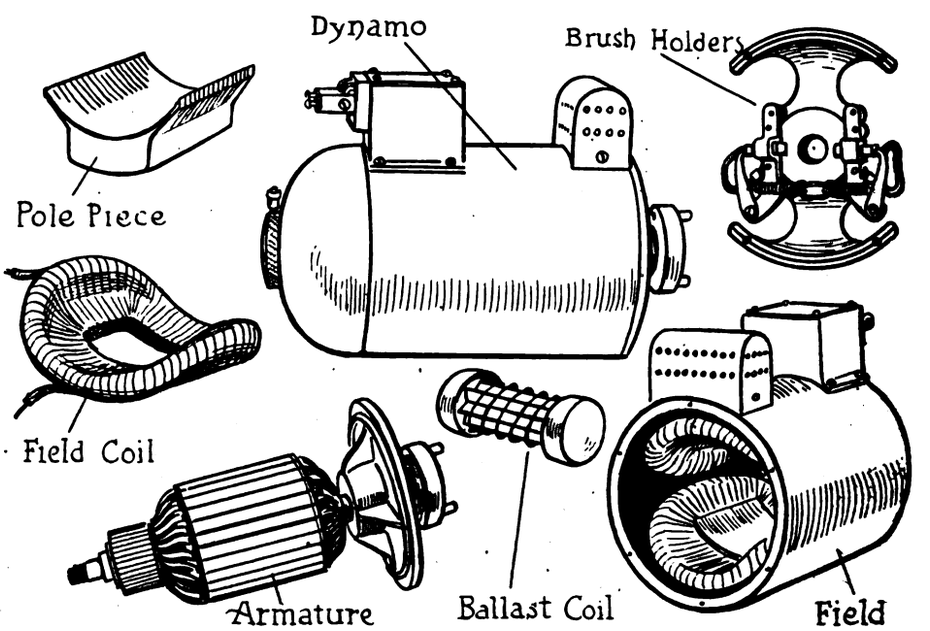
When an electrical apparatus of the kind comes from the manufacturer it may be expected to be in perfect condition, and though the latter part of the saying anent letting it alone would seem to be particularly applicable, it is not well always to let it severely alone. Which does not necessarily mean that it should be taken down part by part and boiled in oil just to make sure that it will keep on working well. But it should be examined from time to time no matter how well it is working, for no such system will operate indefinitely without any attention whatsoever. In a great many cases it is possible to prevent serious troubles by remedying slight troubles as they manifest themselves. Slight troubles, often so slight as to make little apparent change in the operation of a system, may be checked only upon periodical inspections, and even then they may not be apparent to the unskilled worker unless he knows exactly where to look for the most likely sources of trouble or derangement.

Prevalent Fear of Lack of Ability.

It is a mistake commonly made by countless numbers of persons to imagine that they are unable to care for a given piece of mechanism whether it be an electric lighting system, a sewing machine or a phonograph. They get into a sort of panic when some little thing goes wrong and immediately call in a repair man to do work which is so simple as almost to be ludicrous—to the repair man. But the repair man needs bread and butter, and he does not laugh. Sometimes he makes a big job out of a very little one and doubtless much of the timidity of the average individual to tackle work out of his line can be traced to this very cause. Actually, if electric lighting systems are given attention and at least a part of the care that has been outlined as necessary in the past six issues of Motor World, there need be very little cause for anxiety on the part of the owner; there is so very little that can get out of order and such slight troubles as develop are so easily remedied that there should be no necessity for the services of an expert—provided the owner is conversant with the characteristics of the system with which his car is equipped. Knowledge, however, is essential, but it is quite easily acquired.

The Problem of Output Regulation.

From these articles it may be gathered that one of the greatest problems with which the manufacturer of such devices has had to work has been the provision of some simple means of positively regulating the output of the generator. In central station work, it is a comparatively simple matter to regulate the output of dynamos by varying their speed, but for automobile work such methods are impracticable. Hence, it becomes necessary to provide some other means of accomplishing the end. Either a mechanical or an electrical device of some sort must be used. Both are used with a great deal of success, though due to the greater simplicity of electrical devices they are generally more in favor.



RUSHMORE DYNAMO DISSECTED, SHOWING COMPONENT PARTS

In several systems combination electro-mechanical devices are used, and these too have given good service wherever used.

Unusual Electrical Governing.

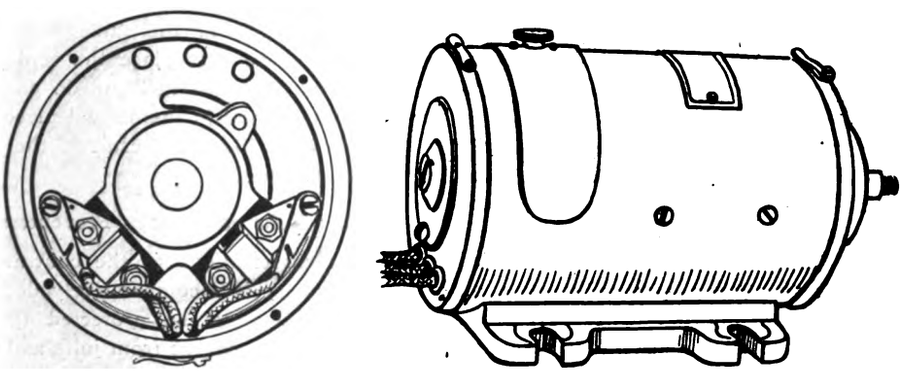
In the dynamo manufactured by the Rushmore Dynamo Works of Plainfield, N. J., positive regulation is obtained electrically in a manner different from that employed in any other system. The method employed is unique and is based upon a little-known though well-proven peculiarity of iron. The dynamo itself is of the shunt wound type and in addition is equipped with what is known in electrical engineers' parlance as a "bucking coil." The current that is passed through this bucking coil is

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regulated with the aid of a simple coil composed of a few turns of iron wire mounted on a heat resisting mandrel and carried in a ventilated housing on top of the dynamo.

Hot Wire that Chokes off Current.

The peculiarity of the iron wire referred to is the fact that its resistance to the passage of current remains practically constant, or increases only very slightly up to a certain critical temperature. After the critical temperature is reached, however,—the iron wire heats because of the resistance offered to the flow of the current—its resistance rises very rapidly. When its resistance is low, as when the dynamo armature is rotating slowly and little current is being generated, very little current flows through the bucking coil and the strength of the field and consequently the output of the dynamo increases in proportion to the increase in the speed of the armature. When the speed reaches a certain limit, however, the heating of the coil of iron wire, which is styled a "ballast coil," increases its resistance and forces a part of the generated current through the bucking coil, the result being that the field strength is reduced and the current output held practically constant. The critical temperature in the ballast coil is reached at about 15 miles an hour car speed when the current output is about 12 amperes. At higher speeds the current remains practically constant, and never exceeds 13 or 14 amperes maximum, under any conditions.



END AND SIDE VIEWS OF HARTMAN ENCLOSED DYNAMO

Inherent Simplicity of Regulation.

From the foregoing it may be judged that the output of the generator is governed directly by the iron ballast coil in conjunction with the bucking coil, which depends upon the ballast coil for operation. Consequently it is a simple matter to adjust the dynamo to deliver almost any current between about 4½ and 15 amperes by inserting a different size ballast coil in place of the one in use. If the ballast coil is removed, which operation is simple, for the reason that the coil is made in the form of a cartridge fuse and may be lifted out of its holder quite easily, the dynamo becomes a simple differential machine and will deliver a practically constant current of 4½ amperes regardless of speed variations. Obviously, it is not permissable to replace the ballast coil with a coil other than that supplied by the manufacturer. However, the coils are inexpensive, and, as it is such a simple matter to alter the dynamo output by changing them, as, for instance, when the car is driven chiefly at night and a heavy current is needed, that it is a wise plan to have several cartridges on hand.

Caring for the "Ballast Coil."

By reason of the inherent self-regulating feature of the Rushmore dynamo, there is absolutely nothing in the regulating apparatus to get out of order or even to require attention. It will operate for indefinite periods with uniformally good results, though it is the better part of wisdom occasionally to examine the ballast coil and remove from it any accumulations of dust and dirt which may have collected.

Characteristics of the Cut-Out.

The automatic cut-out is located in a small tight housing on top of the dynamo at the front and is an electro-magnetic device of the usual pattern. When the battery current exceeds the generated current, the circuit between the dynamo and the battery automatically is broken, thus preventing the battery from discharging itself through the generator. Owing to the fact that the latitude of movement of the moving parts is exceedingly small, they never will require lubrication, and the only attention the device will require concerns itself with the contacts. These may be cleaned occasionally with a very fine flat file or two pieces of fine emery cloth glued to opposite sides of a piece of thin Bristol board. Care should be taken to remove all filings or dirt from the mechanism before the cover is replaced. Although adjustment should not be necessary for prolonged periods, it may be made by turning the small screw at the bearing end of the electro-magnet armature. Whenever such mechanisms are examined, the wiring and the binding screws should be carefully scrutinized to make sure that no worn places or breaks are present and that the screws are tight.

Solid Construction of Dynamo.

The dynamo itself is unusually rugged and substantial, and there is nothing in its make-up, barring the brushes and the commutator, which might require even occasional inspection. As an indication of its inherent simplicity, the entire field magnet circuit, which mounts the pole pieces, is merely a length of cold drawn steel tubing cut to the proper size and finished. To it are fastened the pole shoes, which also are sliced off a bar of steel tubing drawn to the proper size and shape. So accurate is the drawing that further machining is unnecessary. Barring the armature, which is standard in construction, the whole machine is virtually a solid mass of iron and copper wire, which is practically indestructible except under conditions extraordinary.

Management of the Commutator.

The armature shaft is mounted in ball bearings of liberal size and requires no more lubrication than does the ordinary magneto; a couple of drops of fine machine oil about once or twice a season is sufficient. The care required to maintain the commutator and brushes in proper condition to render their best service already has been outlined. The brushes should be removed and thoroughly cleaned from time to time to remove accumulations of grease and carbon dust, and the wire connections made tight, for continued vibration is likely to loosen them. The commutator should not show signs of wear for long periods, provided it is not abused by permitting the brushes to spark or to cut it due to the presence of hard particles of carbon or other foreign matter. Occasionally, a minute quantity of fine vaseline, applied with the aid of a piece of felt while the armature is rotating, will assist in preserving the surface smooth.

Why Wiring May Cause Trouble.

In the Rushmore system, as in every other system, great care should be taken to see that the wiring is properly connected. Probably nine-tenths of all the troubles originating in such systems can be traced to faulty wiring—wires either improperly connected, or loose connections, or the use of wire that is too small in cross section. Where doubt exists regarding the proper size of wire to use, a larger size rather than a smaller size always should be used. Wire that is too small causes resistance to the

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passage of the current and a consequent decrease in the output of the generator in addition to which there is danger that it may become broken or that it will heat up and cause fire. The latter is unlikely, however, in view of the fact that the current employed is compartively low and is merely cited as a possibility that should not be overlooked.

The Hartman generator, manufactured by the Hartman Electrical Mfg. Co., of Mansfield, O., differs from many of those that have been described, essentially in that it is of the constant voltage instead of the constant current type, the theory being that the constant voltage machine permits the lighting load to be carried direct by the dynamo without danger to the lamps, and also delivers a "taper charge" to the storage battery during charging operations. The method of obtaining regulation also is different, and is vested in an electromechanical device which varies the field resistance through the current according to the speed of the armature.

Operation of Voltage Regulator.

The regulating device is contained in a tight housing, which with the switches, etc., occupies a place on the dash of the car or in any other convenient location. The housing also contains the automatic cut-out which is an electro-magnetic device. Owing to the fact that the movement of the armature in the regulating device is very small—it is less than 1/32 of an inch—and that the steps of resistance that are inserted in the field circuit are so small as to eliminate the possibility of arcing at the contacts, there is practically nothing in the mechanism to get out of order or to require attention. It will be sufficient to make sure that it really is performing its functions properly, and this may be ascertained by turning on the lights and noting whether they brighten perceptibly when the engine is speeded up. If they do brighten, it may be taken for granted that the regulator has suffered some derangement, for under normal conditions the brightness of the lamps should remain practically constant regardless of speed changes between about 500 and 2,000 revolutions a minute.

Indices of Impending Trouble.

If the lights brighten perceptibly when the engine is speeded up, the regulator should be examined to make certain that accumulations of dust or dirt have not short-circuited some of the contacts or that the armatures have not become stuck, preventing their operation. Accumulations of dirt should be removed with a soft brush, and if the contacts give evidence of corrosion, they may be cleaned with very fine emery cloth or a fine flat file. Owing to the fact that terminal blocks for the connection of the various wires from the battery, the load and the generator are supplied, little difficulty should be experienced in making the proper connections.

The Function of the Fuses.

The Hartman system, like many others, is thoroughly protected by fuses, the purpose of which is to prevent the lamps from burning out in the event that a surplus of current accidentally passes to them, and also to protect the wiring of the dynamo and the car. Obviously, in the event of failure to generate, or in case the lamps cannot be lighted, the first place to look for trouble is in the fuse block. Generally, the burned out fuse will serve to indicate the location of the troube which always should be corrected before a new fuse is inserted. Individual fuses are used in the individual lighting circuits so that the blowing of a single fuse does not cripple the whole lighting system. Spare fuses are carried in the cover of the fuse box, and their insertion is but the work of a minute.

The Hartman generator is completely enclosed, as shown by the accompanying sketches, and therefore practically is proof against the insidious action of dirt and water. Access to the commutator and brushes is through a removable plate on top of the field housing. The brushes are formed of a special composition calculated to resist sufficient wear to necessitate their replacement during the life of the car. In case adjustment becomes necessary, however, or they require to be cleaned, they may be removed simply by lifting the spring returned arm which serves to hold them in contact with the commutator. Their position will require to be shifted, of course, according to the direction of rotation of the armature, and in order to permit this adjustment the brush holder is fastened in place by means of a couple of brass screws shown in the end view of the commutator end plate. Loosening the screws permits the position of the brushes to be shifted. To change the direction of rotation of the armature it is merely necessary to reverse the wires leading to the brushes.

Need for Adequate Insulation.

As is the case with the majority of other lighting systems, failure to generate generally can be traced to broken wires or faulty connections. Great care should be taken in installing any system to make sure that the wiring is adequately insulated. It is poor policy to use cheap wire just because it is cheap; it is certain to give trouble in the end. No automobile can be expected to run without any vibration whatsoever, and any slackness in the wiring which permits incipient chafing is sure to result in trouble of some kind. For this reason the wires should be carefully hung to the woodwork wherever possible and two wires never should be placed under the same staple. Where the wiring leads from the body to the chassis a liberal loop should be allowed to permit of slight movement between the parts for tightly stretched wires are extremely likely to break at unexpected moments and from unsuspected causes.

Disposal of the Storage Battery.

Another more or less frequent source of trouble lies in the disposition made of the storage battery which forms an integral part of all such systems. The battery should be placed in an accessible position and should be securely braced to prevent movement under violent bouncing of the car due to bad roads. No battery ever should be placed in the same box with tools, for in the first place the tools are likely to become loosened and do damage to the battery, and in the second place the acid fumes are likely to result in the corrosion of the tools.

Rubber Balls as Damage Preventers.

Despite dissertations to the contrary, a storage battery is a comparatively delicate structure that must be protected to the greatest possible degree from jolts and jars and mishandling generally. Often it is possible to secure a battery in place in a box normally slightly too large by squeezing small rubber balls such as commonly are sold by stationary and toy stores between the battery and the box. The balls prevent movement of the battery and at the same time prevent violent shocks being transmitted to it. It is not wise, however, to place rubber balls beneath the battery; a rubber mat formed of a few thicknesses of an old inner tube will serve the purpose better.

Simple Improvement for Battery Terminals.

The terminals of storage battery leads and of the jumpers which connect the different trays of cells together, made of heavy brass or copper, sometimes are of the ring type, so that their removal necessitates the taking off of the nuts which secure them. These ring terminals can easily be converted into the more usual and far more convenient hook form by the mere sawing out of the side of each a section large enough to permit the ring to slip off the stud when the nut is loosened. The cut-out should be made as close as possible to the shank of the terminal so that the wire cannot slip off of its own weight if the nut accidentally becomes loosened.

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MULTITUDE AND MULFORD IN EVIDENCE AT BRIGHTON

Large and Enthusiastic Assemblage Looks On While Mulford Takes Major and Minor Events—Two Spills Occur.

If the crowd which turned out to witness the second speed offering of the Motor Dealers' Exhibit Co., which was run on the Brighton Beach track, in Brooklyn, N. Y., on Election Day, November 5th, can be taken as a criterion, the oft-reiterated statement that interest in automobile speed contests is waning certainly is far from true. Of course, the balmy weather which prevailed was in a measure responsible for the vast multitude which more than filled the grandstand and overflowed into the field, but that a goodly proportion of the very enthusiastic 10,000 was attracted as a result of the fine program which was offered and the perfect management which was in evidence at the previous meet on Saturday, October 19th, was equally obvious.

And the program, and the manner in which it was carried out, left nothing to be desired. Ralph Mulford, who drove the surprising little Mason car, was the hero of the day. He accounted for both the feature events—a 100-mile free-for-all and a ten-mile event for cars with displacements under 600 inches; also he finished second to Len Ormsby (Kline) in a five-mile handicap event in which he started from scratch and gave the winner a 20-second handicap. The other event which was decided, a ten-mile free-for-all handicap, went to Mitchell (Mason).

The field for the free-for-all "hundred" numbered 13, all those who were scheduled to start lining up save Chandler (Studebaker), who had broken a crankcase before the start of the program. Pullen (Mercer) assumed the lead in the first lap, with Mulford close behind. The others were strung out within a distance of half a mile. Lewis in the Stutz gradually crept up, and at the end of the third lap took the lead from Pullen.

The first to stop at the pits was Len Ormsby (Kline), who experienced slight motor trouble; Mulford stopped during his fourth round for a tire replacement. Lewis held his position until the end of the tenth lap, when he put into the pits for a tire replacement and LeCain (Stutz) went to the fore, with Thebaud (G. J. G.) and Ferguson (Mercer), who had had tire trouble, and Mulford were trailing along behind, gradually making up for lost time. As Neil Whalen (National) was rounding the turn into the homestretch on his 19th lap his mount skidded and very nearly crashed into the fence, but the driver righted it in time. LeCain still held the lead at the end of the 23rd lap, but Dave Lewis was driving like a demon and before the 30th circuit was completed he had wrested the premier position from his team mate.

The one accident of the day which had even the semblance of being serious occurred when Whalen slewed sideways through the fence on the club house turn on the 29th lap, chopped down a few saplings, bringing up against an embankment 50 feet from the track, with both driver and the mechanician, Joe Becker, injured and the machine badly smashed. Both men were rushed to the hospital, but their injuries happily are not of a very serious nature. Just before Whalen's mishap LeCain had come to grief at the same spot, when a tire burst and the car turned twice around and ran backward into the field.

Tire trouble again cost Lewis his position, and the distance half completed saw Pullen (Mercer) leading, with Ferguson (Mercer) in second place and Lewis third. Lewis's fast driving soon closed the gap between himself and the leader, and the 60th circuit saw him again in the lead with Mulford running a very close second and Mitchell (Mason) in third place. Lewis came to grief on the next lap, when his car skidded and turned completely over, without injuring either of the occupants.

After ten minutes of the hardest kind of work, the car was again started in the contest, but after making two circuits of the track, was ruled off by the referee because of a bent front axle.

The last 25 miles were run "in the shadows," for darkness came before the race was completed. Mulford and Mitchell "see-sawed" for the lead, while third place was hotly contested between Pullen and Wishart, the Mercer drivers. Mulford gradually pulled away from his team mate and finished the distance in 1:42:11. Mitchell finished less than a minute later, and Wishart followed after an interval of 45 seconds. Pullen (Mercer), Thebaud (G. J. G.), Ormsby (Kline), Le Cain (Stutz) and Minker (Kline) still were running in the order named when the race was called.

The ten-mile event for the Rector trophy resulted in a dual contest between Lewis (Stutz) and Wishart (Mercedes). The latter led up to the ninth mile, when Lewis assumed the lead and finished in 9:17.50. Ormsby's was an easy victory in the five-mile handicap event, and he easily completed the distance in 5:01.20, leading home Mulford, the scratch man, and Limberg (Mercer). The ten-mile free-for-all handicap went to Mitchell (Stutz), who had a 50-second handicap and finished in 9:47.55, with Lewis (Stutz), who had a 10-second handicap, in second place. The summary:

Ten miles, for cars with displacements of under 600 inches—Won by Ralph Mulford (Mason); second, Spencer Wishart (Mercedes); third, Neil Whalen (National). Time, 9:17.50.

Five miles, for cars with displacements of under 301 inches, handicap—Won by Len Ormsby (Kline), 20 seconds; second, Ralph Mulford (Mason), scratch; third, Limberg (Mercer). Time, 5:01.20.

Ten miles, free-for-all handicap—Won by Mitchell (Mason), 50 seconds; second, Dave Lewis (Stutz), 10 seconds; third, Spencer Wishart (Mercedes), scratch. Time, 9:47.55.

100 miles, free-for-all—Won by Ralph Mulford (Mason); second, Mitchell (Mason); third, Spencer Wishart (Mercer); fourth, Ed Pullen (Mercer). Time, 1:42:11.00.

Thompson Retires from Speedway Project.

Because he realizes that it will take more capital than can readily be raised to build the motor speedway on the New Jersey "meadows," which feat is being undertaken by the Metropolitan Motor Speedway Association, and because he further realizes that his time is too much taken up with other business ventures to devote the needed attention to the project, Jefferson DeMont Thompson has resigned the presidency of the association. Who will fill the vacancy is not as yet known. At the office of the association, however, it is stated that new capital to the amount of $150,000 has been raised and that, with the engineering work which has to do with the filling in of the swamp land completed, it is expected that the filling in will be started within the next few days. Where the new capital came from was not stated.

Sedwick Sails for Foreign Entries.

Charles W. Sedwick, manager of the Indianapolis Motor Speedway, is booked to sail to Europe tomorrow. While abroad he hopes to enlist the support of several of the more prominent continental manufacturers with a view of securing entries for the May meeting of the speedway. Incidentally, several radical changes are to be made in the speedway plant itself. The present press stand, judges' stand and executive buildings, which are grouped near the starting line behind the pits, are to be torn down and will be replaced by one large, modern, five-story pagoda building.

Speare Again Heads Massachusetts Body.

Lewis R. Speare was again re-elected president of the Massachusetts State Automobile Association at its annual meeting in Boston last week. J. B. Coghlin, vice-president, and James Fortescue, secretary-treasurer, also were re-elected.

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MAY BUILD CENTRAL GARAGE TO END PARKING IN STREET

Birmingham Proposes Semi-Municipal Shelter to Relieve Congestion—How Other Cities Have Met the Problem.

The parking problem—that is, how best can be alleviated the congestion resulting from the leaving of cars in front of office and other buildings in the downtown section—has struck Birmingham, Ala., as it has other municipalities, and this "Pittsburgh of the South" has made tentative plans for a solution; it is none other than the making of an appropriation for the construction of a semi-municipal garage for the accommodation of private owners.

The city engineer and the mayor recently made thorough investigation of conditions and found that the proprietors of business in or near office buildings complained that the closely placed line of cars at their curbstones interfered seriously with their trade and that a hardship was being worked upon them by this wayside parking. Much trade is said to have been diverted to streets where the practice of parking automobiles does not exist.

Should the suggestion be carried out the garage will be built in as central a location as possible, so that owners who drive to their offices in the morning will be able to walk from the garage to their offices after taking the cars to this shelter. However, if the car is not to be left for a great length of time it wil lbe permitted to stand at the curb. It is planned to make exceptions of certain stores which do not object to cars standing at their doors while the occupants are shopping. Pittsburgh, Pa., after which the Southern city likes to call itself, has had a more or less similar scheme in operation for some time. The Pittsburgh garage, a private institution, however, was originally erected to care for trucks operated by business houses, but considerable trade has come to it from pleasure car owners who formerly felt the inadequacy of downtown parking facilities.

In certain other cities, among them Detroit, Mich., parking is permitted at the curb, because of lack of a better method of disposing of the cars, but they are obliged to stand obliquely to the street line, thus making it easy to remove any car from the line or for another to add itself thereto. In Syracuse, N. Y., a few months ago the congestion of cars caused the public safety officials to paint parking spaces in certain of the public squares and regulations as to placing were enforced. In Los Angeles and other cities the "move on" ordinance is quite strictly enforced; cars are permitted to remain standing in the same place not longer than 20 minutes.

Legal Status of Road and Ditch.

Fixing the dividing line between a road and the ditch beside it might be a difficult problem, but aside from this feature of the case the law has declared that the road and the ditch are two separate pieces of construction; in other words, the ditch is not a part of the road.

This decision was made this week in the New York City Court by Justice Green, who was asked to set aside a verdict of $767 awarded by a jury to William P. Hardenbergh, former president of the New Jersey Zinc Co., in an action against the Employers' Liability Assurance Co. of London. Hardenberg's car ran into a ditch and was damaged, and when he took his disputed damage claim to court the jury gave him the full amount asked.

The insurance company moved that the verdict be set aside, claiming that the policy did not cover damage to the car through collision with any part of the road and alleging that the ditch was a part of the road. The judge, however, ruled otherwise, denied the motion and, in giving his opinion, cited three dictionaries as authority for his decision that a ditch, although it runs alongside of a road, is not part thereof.

What Makes Petrol Peter Out.

If the sale of "petrol" in sealed tins to British motorists has advantages, it also has disadvantages, and not the least of them is the comparative ease with which the purchaser can be given short measure, despite elaborate precautions against the practice evident in careful "sealing" of the tins. Of late, complaints of short measure which had been particularly numerous led one motorist to make investigation, and the excuses he received in explanation of palpable shortages were numerous and ludicrous.

One dealer explained that the fuel was expansible to a readily distinguishable degree and that certain climatic conditions resulted in considerable shrinkage in volume. Another advanced the theory of evaporation, though the tins supposedly are hermetically sealed by the producers. After considerable investigation he discovered at least one method by which the unscrupulous dealer "milks" the tins. The screw-caps with which the tins are fitted were turned sufficiently to permit the fuel to ooze out drop by drop with the tin inverted over a receiving vessel, but the cap was not loosened enough to break the seal. Thus a considerable quantity of fuel could be abstracted from the tins before they were vended to the unsuspecting motorist.

DISBROW AND HIS TROUPE PLAY TO LOUISIANA CROWD

Make a Two-Day Stand at Shreveport, Where Endicott, Nikrent and Disbrow Share the Honors—Time Trials Are Abundant.

Louis Disbrow and his troupe favored Shreveport, La., with their presence on Sunday and Tuesday last, when, under the auspices of the Shreveport Automobile Club, they performed. The program provided was not of a hair-raising nature, five of the ten events being time trials. There also was a match race on each day, leaving but three open events, all of which were free-for-all handicaps. William Endicott, Louis Disbrow and Joe Nikrent each placed one of them to their credit. The summary:

Sunday, November 3rd.

One mile, time trials—Ulbrecht (Case), time, 1:03¾; Joe Nikrent (Case), time, 1:04⅕; Kilpatrick (Hotchkiss), time, 0:57⅘; Endicott (Case), time, 0:57⅕.

Five miles, match race—Won by Joe Nikrent (Case); second, Ulbrecht (Case). Time, 5:32.

Two miles, time trial—Louis Disbrow (Fiat), time, 1:57.

Ten miles, free-for-all handicap—Won by William Endicott (Case); second, Joe Nikrent (Case); third, Kilpatrick (Hotchkiss), Time, 7:44.

One mile, time trial—T. C. Jones (Cadillac), time, 1:09⅕.

One mile, time trial—Louis Disbrow (Simplex), time, 0:57⅗.

Five miles, free-for-all handicap—Won by Louis Disbrow (Simplex); second, Joe Nikrent (Case); third, William Endicott (Case). Time, 5:02⅗.

Tuesday, November 5th.

One mile, time trials—T. C. Jones (Cadillac), time, 1:05⅕; Joe Nikrent (Case), time, 0:56⅕; William Endicott (Case), time, 0:55⅘; Kilpatrick (Hotchkiss), time, 0:56⅕; Ulbrecht (Case), time, 0:61.

Five miles, match race—Won by William Endicott (Case); second, Ulbrecht (Case). Time, 5:12⅗.

Ten miles, free-for-all handicap—Won by Joe Nikrent (Case); second, William Endicott (Case); third, Kilpatrick (Hotchkiss). Time, 11:02⅘.

New Texas Automobile Club.

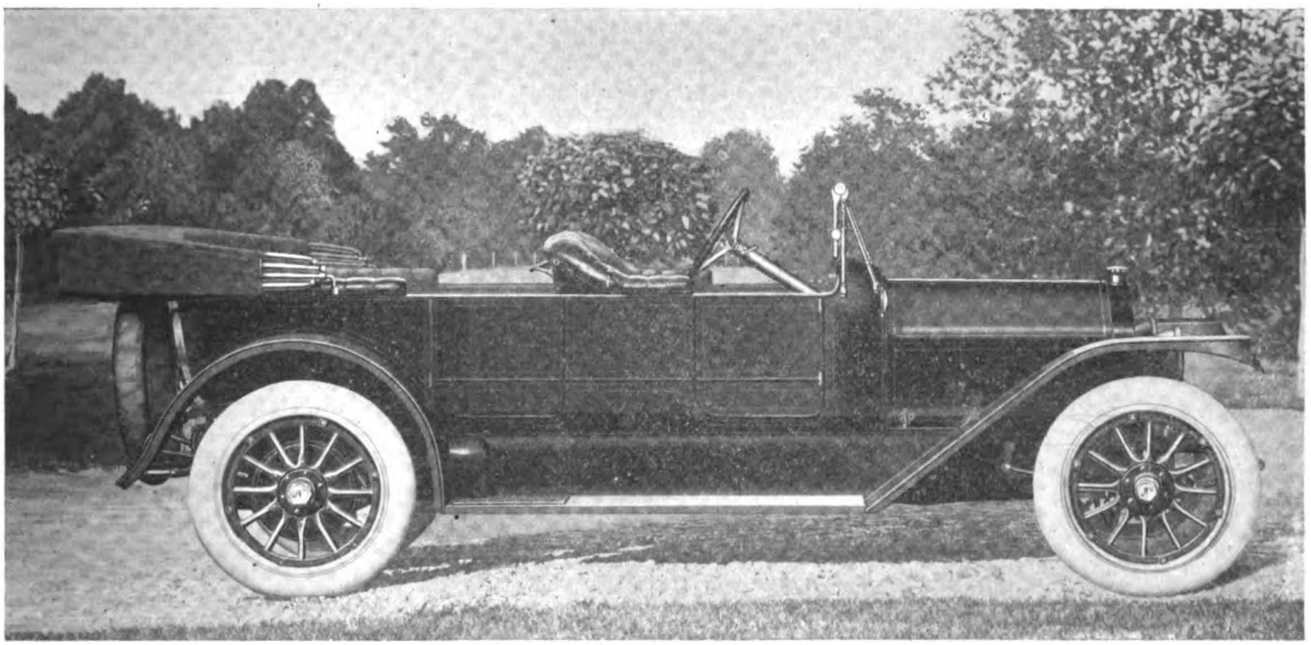
At a meeting held at Cuero, Tex., and which resulted in the formation of the DeWitt County Automobile Club, W. M. Ratcliff was elected president. The other officers are: Vice-president, Walter Ruffert; secretary-treasurer, Alfred Frobese.

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Five Passenger Touring Car, One of Five Models, Improved Series V

Announcement of National Improved Series V

Do not compare the NATIONAL with any car except those costing $5000 or more. You have studied the 1913 announcements of other high-grade cars, and now without wasting words on superlatives we invite your candid reasoning—we can prove the NATIONAL offers you in Quality, Utility, Luxury, Reputation and Intrinsic Worth as much or more than any $5000 car for

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Write us at once for our dealers' proposition and advance catalog

Compare these features with the very highest priced 1913 cars and you realize why we claim to offer you the greatest value on the market today

Long Stroke (4⅞ x 6), flexible and noiseless Motor, with enclosed valves.
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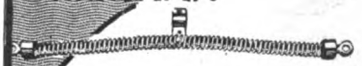
National MOTOR VEHICLE CO.

Indianapolis, Indiana

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To Smooth Rough Roads

THE LITTLE STEERSMAN



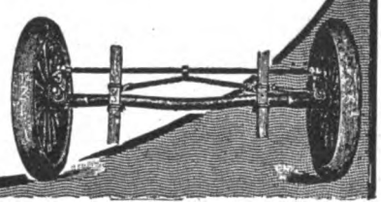
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Removes all nervous strain—takes physical strain from steering operation—holds machine steady—prevents accidents in case steering gear breaks or tire bursts.

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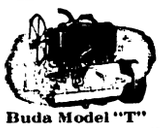
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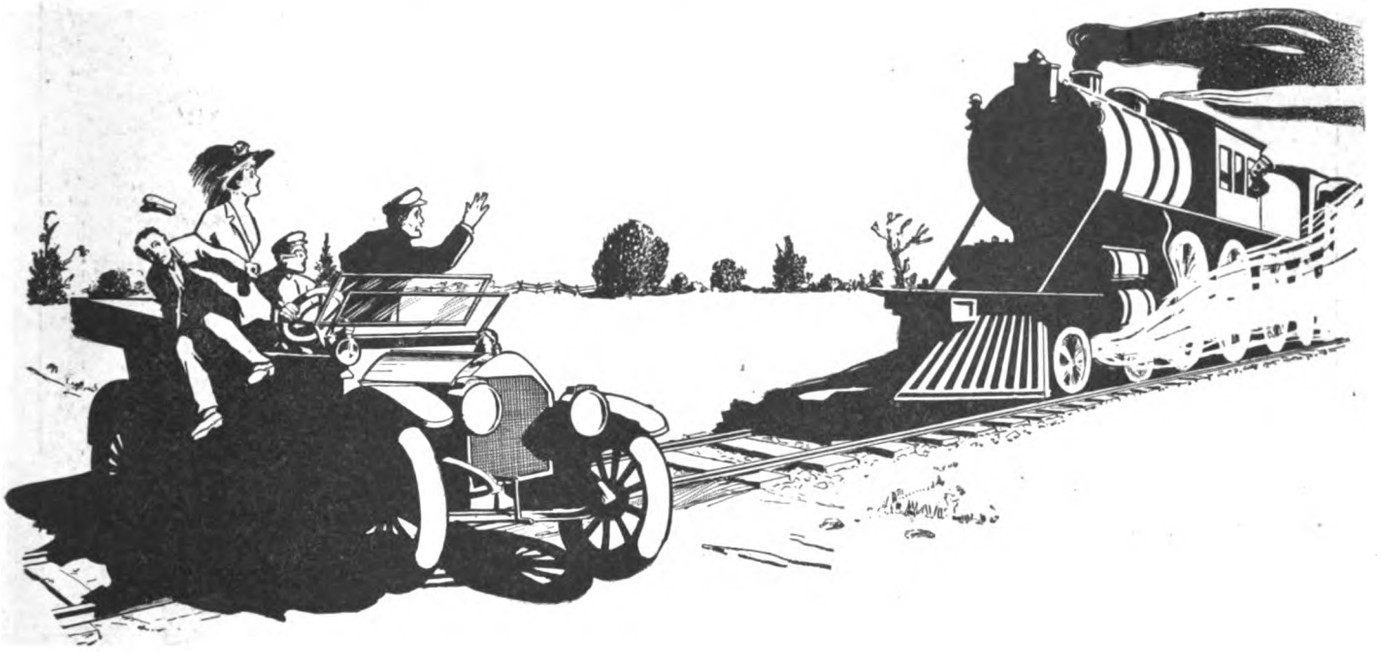
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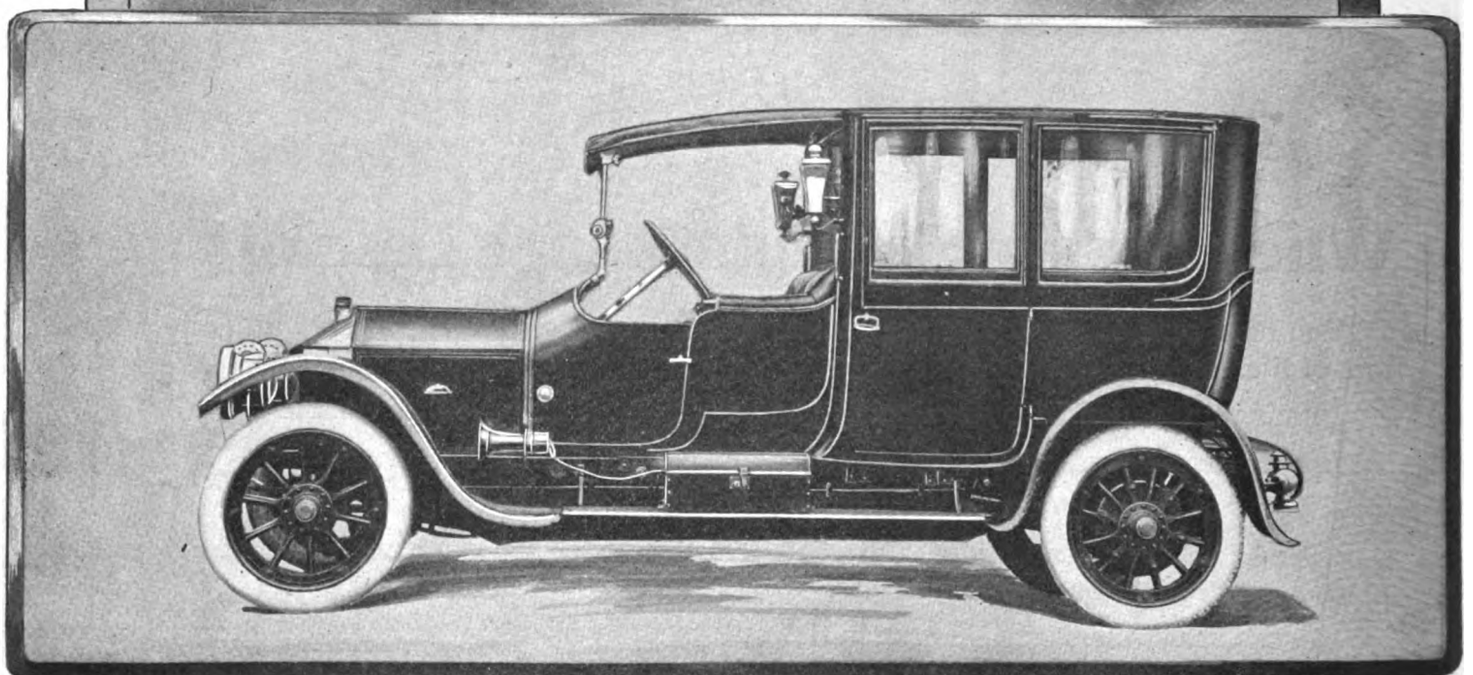
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From the radiator of unique design to the end of the rear springs—from tire to top, this powerful, unbreakable car offers value in service away beyond that of any other European or any American product. There is a selling argument in every item from steering knuckle to engine.

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THE METALLURGIQUE MOTOR CO., 1934 Broadway, New York

W. C. and H. N. ALLEN, Proprietors

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Stewart
Delivery Cars

Sell Stewart Trucks In Winter Months

Now is the time when touring car sales begin to drop off. Cold weather slows down the business of every dealer who sells only pleasure cars.

But for the dealer handling Stewart Delivery Trucks, there is no let up. These cars sell just as well in winter as in the summer months. In fact, there is more need for motor delivery during the cold, snowy days and the rush of holiday trade than at any other time. Merchants are already worrying over their holiday deliveries. They know that their horse equipment will be inadequate.

We are in a position to guarantee prompt deliveries of Stewart Delivery Trucks in time for the holiday rush. We can furnish dealers their demonstrators almost immediately. Now is the time to go out and secure this desirable business. Merchants are looking for the right car; one that is scientifically designed for delivery service. See these five reasons why Stewart Delivery Trucks are money-makers for dealers:

1. NO SEASONS:
   The dealer can sell Stewart Delivery Trucks every month in the year. There are no seasons—no hold-ups for new models to appear while your rent and expense pile up. Every month's sales should be an advance over the previous month. Your sales force can be kept busy every day.
2. NO TRADING:
   Merchants buy delivery trucks to use, not to look at. They are never out of style. So long as the car runs, the merchant will use it, and the longer it runs the better he is pleased. Instead of having to take old cars in trade, every one you sell is a help toward selling additional ones to the same buyer.
3. SMALL EXPENSES:
   Selling commercial trucks, your operating expenses are only about half what they are in selling pleasure cars. Fancy salesrooms unnecessary; no joy riding; no expensive entertainment; no second-hand cars in storage running up your investment. Selling commercial trucks is a straight business proposition, handled in a business way.
4. EASY SALES:
   It is easy to find prospects for Stewart Delivery Trucks. Every merchant using two or more horse-drawn vehicles is a prospect. Merchants are coming to realize the convenience and saving of motor delivery. It isn't a question of getting them to adopt motor delivery, but of showing them the right car. We have it. If their competitor buys delivery trucks, they must buy to keep up with the race.
5. REPEAT ORDERS INSURE A STEADY AND GROWING BUSINESS.
   The sale of one car to any merchant with several delivery vehicles is sure to lead to other sales.

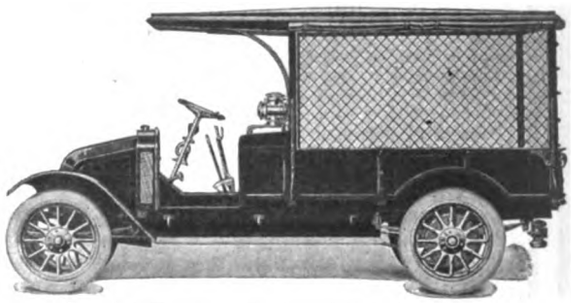
The dealer who gets started now is going to get the cream of the business, besides laying the foundation for a permanent future business that will increase year after year.

Stewart Motor Corporation, Buffalo, N.Y.

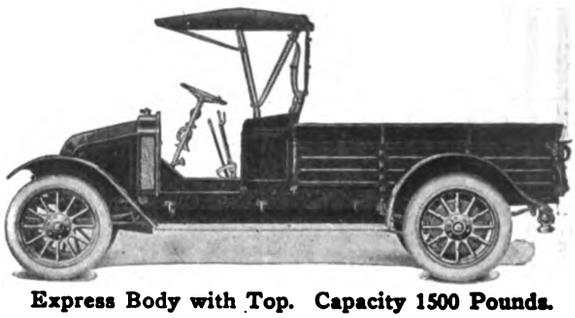
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ROBT. W. INGERSOLL, *Sales Mgr.*



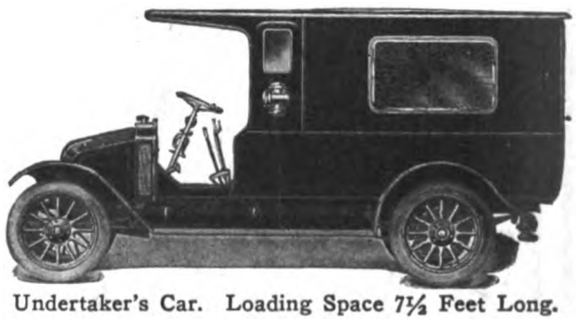
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Express Body with Top. Capacity 1500 Pounds.



Undertaker's Car. Loading Space 7½ Feet Long.

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Every KisselKar representative is ready to give you every opportunity to convince yourself that the KisselKar is the greatest comfort car in the history of the industry.

No car can equal the KisselKar comfort without equalling the liberal wheelbase—and few cars do.

Few cars have such commodious tonneaus—which give greater distinction and riding comfort.

No other car has equally deep seats which allow the occupants to lounge back and fully relax without need to brace against lurches or sidesway on rough roads.

The highest priced car built will not equal the rare riding comfort of the KisselKar.

No car can surpass the road capabilities of the KisselKar—the quick getaway—the reserve power to master the extremest road conditions—the ability to slow down "on high" to a creeping pace, and to climb hills at easy speeds without rushing down one hill to get up the next. In the two great factors of car quality—easy riding and easy driving, the KisselKar is the unmatched car of America.

KISSELKAR SERVICE is supplied by a national service organization maintained by the manufacturers with specially constructed buildings at principal points of America, as service-centers, to co-operate with sales agencies in giving owners the service that lowers running cost, retards depreciation, and insures uninterrupted pleasure.

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Full equipment including top, windshield, speedometer, shock absorbers, demountable rims, and everything belonging to a perfectly appointed car.

KisselKar Trucks, 1500 lbs., 1, 2, 3, 4, 5 Ton

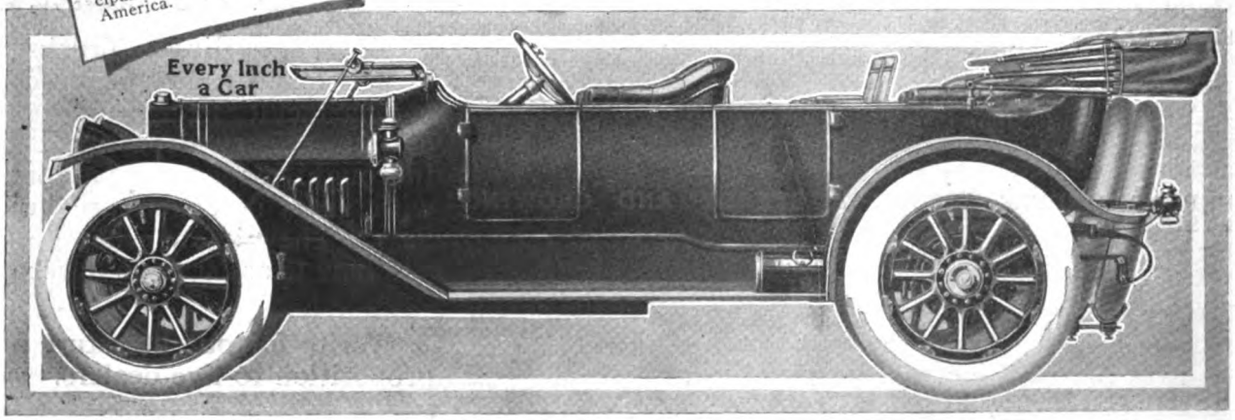
Write for 1913 KisselKar Catalog. It is a great aid in judging automobile values. If interested in any type of power commercial vehicle, write for truck catalog.

KISSEL MOTOR CAR CO.

159 Kissel Avenue **Hartford, Wisconsin**

KISSELKAR SERVICE CENTERS AND AGENCIES

Boston, New York, Chicago, Milwaukee, Kansas City, Los Angeles, Minneapolis, St. Paul, Dallas, Philadelphia, Cleveland, Detroit, El Paso, San Antonio, New Orleans, Baltimore, Omaha, Butte, Denver, San Francisco, Seattle, Portland, Duluth, Buffalo, Pittsburgh, Hartford, Conn., New Haven, Albany, Troy, Montreal, Quebec, Toronto, Winnipeg, and 200 other principal points throughout America.



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TIRE PRESSURE GAUGES

An Important Announcement

A SCHRADER'S SON, INC., manufacturers of the well-known Schrader Universal Tire Pressure Gauge, beg leave to announce to the trade that they have acquired the entire right, title and interest in and to the Twitchell Tire Gauge Patent No. 927,298 dated July 6, 1909.

In view of the acquisition of this patent, purchasers of the Schrader gauges are relieved from any possibility of suits for infringement under the Twitchell patent. The Schrader Gauge will continue to be the highest type of pencil gauge both with regard to accuracy and durability.

Realizing that there is a wide demand for the Twitchell gauges, we have empowered the Twitchell Manufacturing Company of Chicago to continue to supply the market with Twitchell gauges under the Twitchell patent, so that no question of infringement can arise with regard to the product of this concern.

The Allen Auto Specialty Company, manufacturing the Allen Tyrometer, has taken a license under the Twitchell patent, and the suit pending against this company has hence been withdrawn.

We believe that the acquisition of this patent by A. Schrader's Son, Inc., will clear up the gauge situation and relieve our friends of any feeling of uncertainty which they may possibly have had in the past. We also believe that with the Schrader Universal Tire Pressure Gauge, the Twitchell Gauge and the Allen Tyrometer the field for gauges is fully covered, and a variety is offered which allows an ample chance for selection from the different types.

No other gauge is licensed under the Twitchell patent, and hence to avoid any possibility of infringement our friends are asked to restrict their dealings to the three gauges above mentioned.

The Twitchell patent has been sustained in several suits, and the following gauges have been held to be infringements thereof:

The Northam Gauge—held to be an infringement by the United States Circuit Court for the Southern District of California in the suit of Charles R. Twitchell vs. Northam Auto Pressure Gauge Company.

The Prest-O-Lite Gauge—held to be an infringement in the suit of Charles R. Twitchell vs. Prest-O-Lite Company in the Southern District of New York.

The Safety Tire Gauge—held to be an infringement by the Supreme Court of the District of Columbia in the suit of Charles R. Twitchell vs. Rudolph & West Company.

Furthermore, in the suit against the New York Sporting Goods Company the sale of the Edelmann "Economy" gauge was enjoined. This decree was obtained by default, E. Edelmann & Company of Chicago failing to defend its customer, as is usual. Following this, suit has been brought directly against E. Edelmann & Company, which suit is now pending. All other dealers in infringing gauges will be promptly prosecuted.

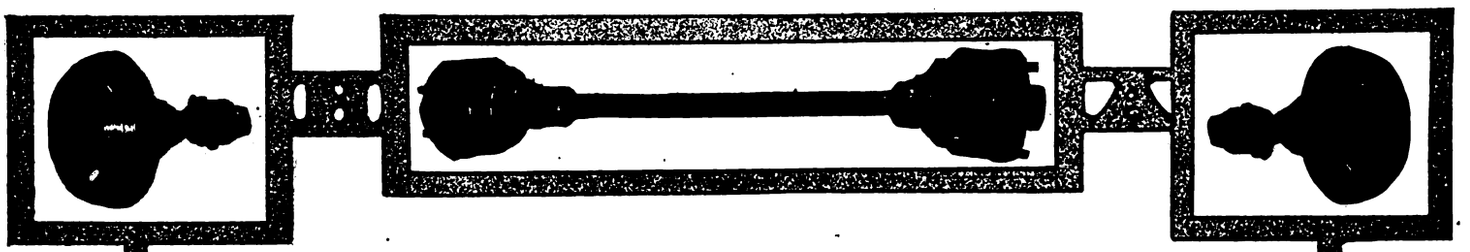
In closing, we wish to assure the trade and consumer that in the future, as in the past, it will always be our endeavor to supply them a reliable gauge at a reasonable price and under satisfactory business conditions. Our gauges may be obtained from all tire manufacturers, jobbers, supply dealers and garages, or direct from us.

Retail price, $1.00 each.

A. SCHRADER'S SON, Inc.

28-30-32-34 Rose Street **NEW YORK CITY**

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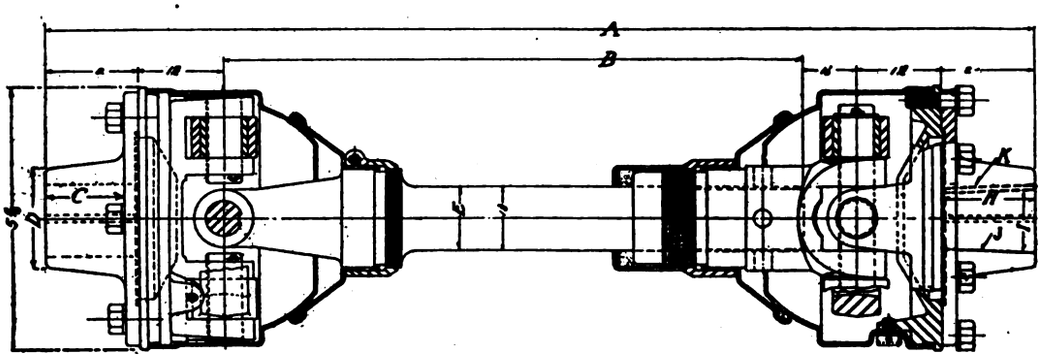
Type F, 400 Drive

Manufacturers contemplating bringing out a "40" will be interested in the detailed description of our new Type F-400 Drive, 40 horse power capacity, pin and ring type.

Details of this universal joint are shown here for your initial information and guidance, and this Universal, like every other Hartford product, embodies quality throughout. Material, high carbon steel, drop forgings all through, with all working parts hardened and ground to gauges with very close limits. All parts are interchangeable and the factor of safety is greater than that usually found in the general run of universals.

We are equipped to turn out this, or any other universal, promptly and every designer of a "40" can get a goodly amount of information by sending for our representative or by writing.

Hartford Universal Joints and Cone Clutches are built to meet individual requirements and we are always ready to co-operate with the engineers of car factories.



SPECIFICATIONS:

A—Total overall length of complete drive.
B—Center of T-Head to end of square. Made to any length specified.
C—Length of Transmission Hub, Standard 2". Max. 2".
D—Diameter of Transmission Hub, Standard 2⅜".
E—Diameter of Propeller Shaft, 1⅜".
F—Width across flats, Standard 1⅛", 1 3/16", 1¼", 1⅜".
G—Width across corners, Standard 1 7/16", 1½", 1⅝" or 1 9/16", 1¾".
H—Length of Rear Hub. Standard 2". Max. 2".
I—Diameter of Straight Round Hole or Maximum Diameter Taper Hole.
J—Taper per foot: Standard 1½", ½", ⅝".
K—Keyway. Standard ¼" x ⅛", 5/16" x 5/32", ⅜" x 3/16".

J. S. BRETZ CO., New York, Detroit, Sole Selling Agents.

CONE CLUTCHES

HARTFORD AUTO PARTS CO.
HARTFORD, CONN.

UNIVERSAL JOINTS

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Here is an Accessory the Sale of Which is Most Active in Winter Time

¶ It does not require much effort to convince the wise dealer of the value of an accessory which is a live seller during the dull winter months. Perhaps that is one of the reasons that the Warm Hand Wheel is getting on to such a marked degree with the automobile dealers and supplymen throughout the country.

¶ Not only in the Warm Hand Wheel a commodity which is an absolute necessity during six months of the year on every car and every truck in the country, but it is an accessory which gives the dealer a good margin of profit at the same time that it is selling fast.

¶ The Warm Hand Wheel is operated either through storage batteries or electric lighting outfit and it may be easily installed upon any car in a few moments' time. On Ford cars the Warm Hand Wheel operates by means of the current generated by the magneto, which is built in the fly wheel of the Ford car. It operates without affecting whatsoever the efficiency of the magneto, for the purpose for which it is intended.

¶ The Electric Warm Hand Wheel is so much of a necessity that it is to the advantage of every salesman in the automobile industry to insist upon having cars equipped with the Warm Hand Wheel. With it the individual will drive his car a great deal more in winter than without it, because the Warm Hand Wheel actually keeps the driver of the car as comfortable in winter as he is in summer.

¶ And just incidentally, right now the Warm Hand Wheel is as much a necessity as it will be in the very severest portions of winter weather. As stated above, it is required over six months of the year, and its installation on cars will mean more car usage in winter than ever before.

¶ The retail price of the Warm Hand Wheel is $15.00 with a liberal dealers' discount. You had better get in touch with us because we want representation in your territory.

THE WARM HAND STEERING WHEEL CO.

527 Fifth Avenue **NEW YORK CITY**





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Dorris
Built to last



The Silent Car

ELECTRIC LIGHTING
SELF STARTING

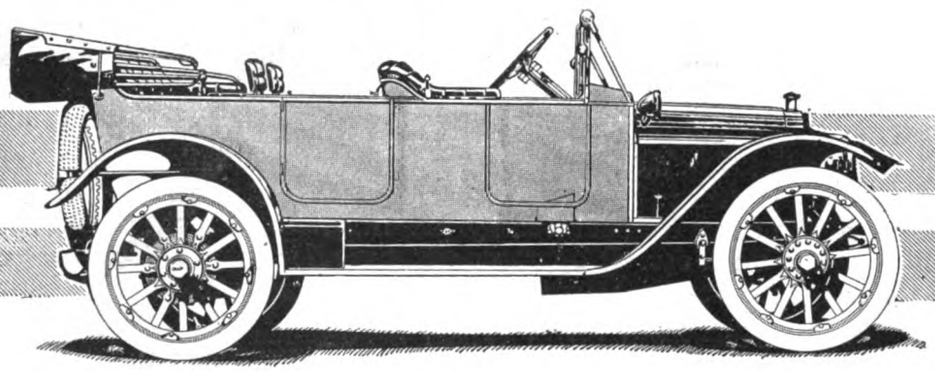
Through eight years of unbroken success the sales of

Dorris Motor Cars

have grown steadily of their own momentum—**like a snow ball rolling down hill.**

The Dorris is a seller and a repeater—a car of unlimited satisfaction, of Maximum service at a Minimum cost—eletcrically self-started and lighted, with all modern refinements of finish and appointments, and the perfection of detail which marks a car of the highest quality.

It shows its exceptional value and ability most under the hardest use in comparison with other machines. It always receives a boost from the owners and wherever it is fairly introduced it takes possession of the territory and dominates the market. In short, it's a car on which to build **permanent,** unlimited success.

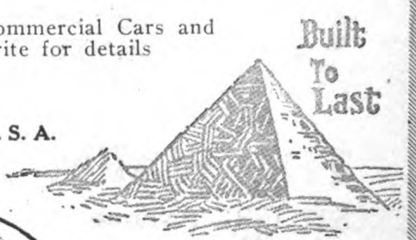


With a new factory more than doubling our capacity we are this year ready to **materially** extend our field.

And for a limited number of progressive dealers in some of the richest motor car territory of the country, we have a proposition of such unusual attractiveness that no live dealer can afford not to know about it.

If you are an established dealer, we can show you the way to a bigger, more stable and more profitable business. If you are not yet in this greatest business of the age, but like motor cars and have energy, ambition, perseverence and a clean record, we will show you the way to bigger and surer rewards for your time and labor than in any other stable business in America today.

We manufacture a complete line of Pleasure and Commercial Cars and can make you a wonderfully interesting proposition. Write for details today.



DORRIS MOTOR CAR CO.

Sarah and Laclede Streets **St. Louis, U. S. A.**

Dorris
Built to last

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THE BEST OF AMERICA

Buffalo Electrics for 1913 embody the best in American design and construction. In many respects they show a decided influence of advanced European practice. The originality and skill of our engineers are not evidenced by anything of a freakish nature—rather by the degree of refinement they have accomplished in those standards accepted as best in both Europe and America.

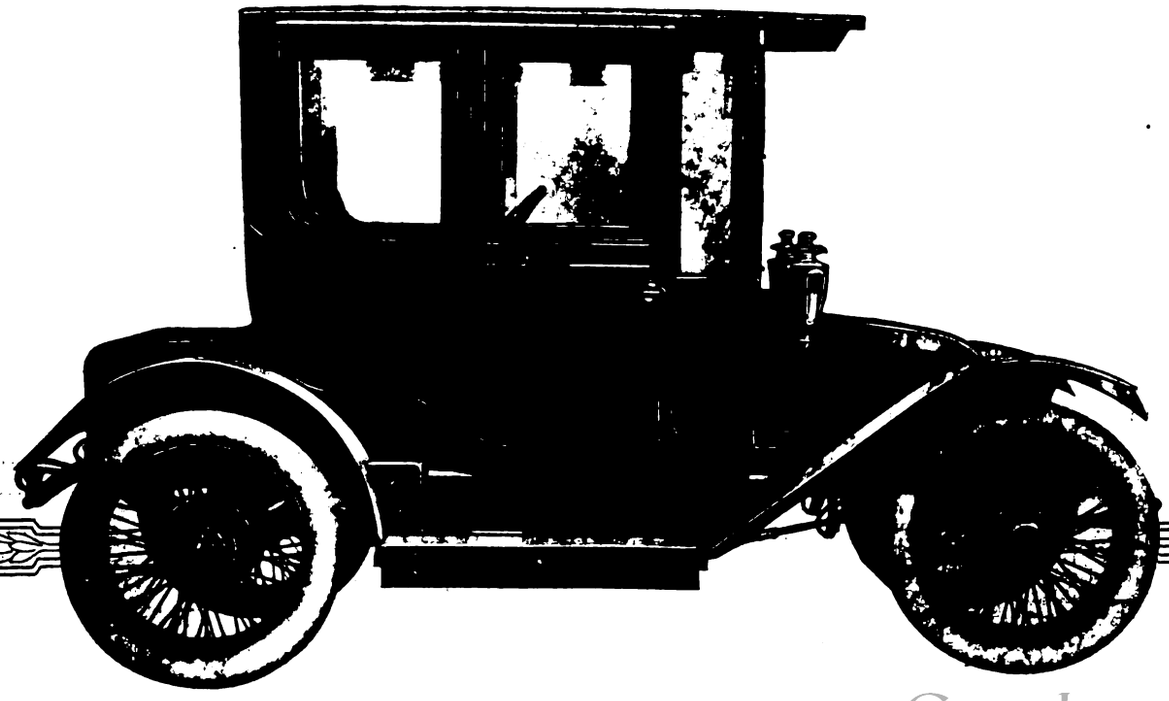
Wood wheels are regular equipment on Buffalo Electrics for 1913. While the use of wire wheels is prevalent in Continental Europe, and while they add a certain distinctive style to Buffalo Electrics, their adoption as special equipment on our cars comes as the result of their strength, economy on Tires, ease of repair in case of accident, and many other sterling qualities.

DEALERS

A series of announcements will appear in this paper describing the features of Buffalo Electric Construction. We want you to judge for yourselves whether or not the 1913 line is superior to any other. There remains some very desirable territory to be assigned to high-grade dealers. Write today for full particulars regarding our selling plan.

BUFFALO ELECTRIC VEHICLE CO.

1222 MAIN STREET BUFFALO, N. Y.



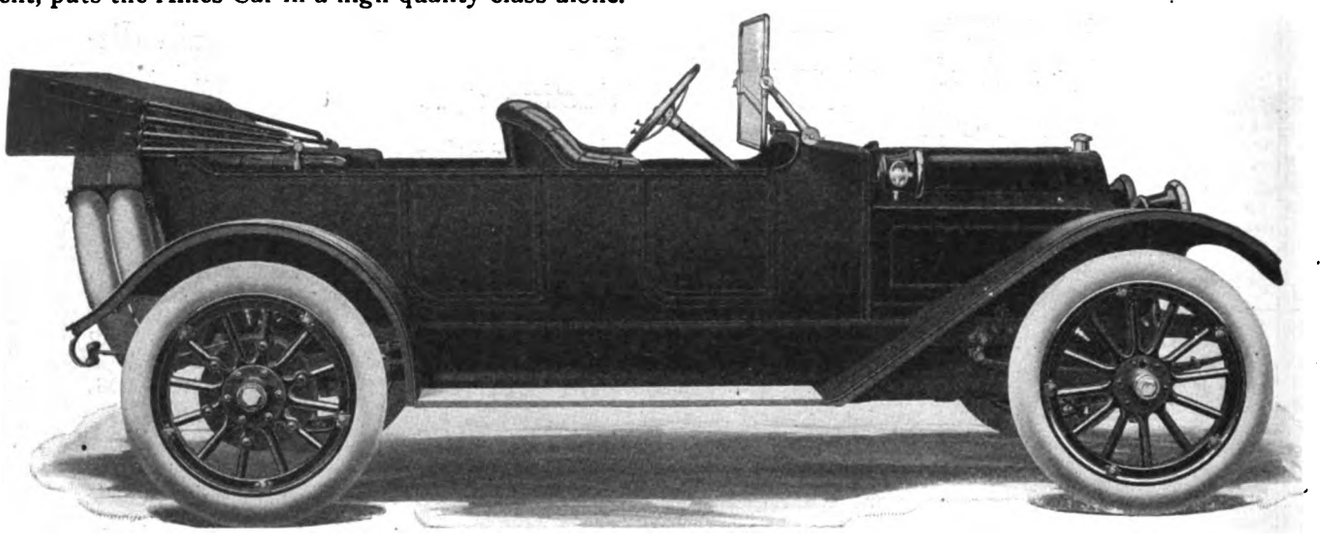
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Why Ames Agents Make Money

The Ames "45" is built to satisfy the most critical buyer. And it does! The Ames "45" represents more real automobile value for $1,635 than any car built. Comparison proves it! The Ames "45" is built by men who stand for quality, integrity and square dealing. And the earned reputation of the car substantiates it.

A Real "Kentucky Thoroughbred"

The Ames "45" is a real "Kentucky Thoroughbred." It shows the perfection of the carriage-builder's art in the beautiful lines of the body—in the luxurious, hand-upholstered leatherwork—in the honest, careful workmanship, attained by two generations of expert carriage builders. This, coupled with the sturdy Continental engines, used by over sixty of America's foremost automobile builders, together with other high-priced equipment, puts the Ames Car in a high-quality class alone.



$1635 **The Kentucky Thoroughbred—Ames "45"** **$1635**

Note These Sales Points Long stroke, powerful Continental Motor—the only motor that has won the unqualified approval of automobile engineers the country over—Electric (Dynamo) Lights—Real Self-starter—Left-hand Drive—Full equipment—"Amesbilt" Bodies and Tops. A combination of power, speed, endurance and graceful lines.

GET THE FACTS

Our 1913 Agency Proposition is the most liberal and profitable agency connection offered today. You need the information we can send you along this line—it means money to you. If you would represent a car that is in "Class A"; that is backed by millions of dollars; that is coupled with powerful sales-aids for agents; that sells for a reasonable price—then mail in the coupon—it brings all the facts. We think you'll find the information we send interesting and profitable to you.

Read These Specifications

Motor—Powerful four-cylinder Continental, unit power plant, en bloc cylinders. Bore 4¼ inches, stroke 5¼ inches. Three-bearing crankshaft. Valves enclosed. Ask any engineer if it isn't the best motor built. Cooling System—Centrifugal force-feed pump. (We tried the "thermo" and it didn't satisfy.) Carburetor—Schebler model O, 1¼-inch, hot-air jacketed. You can't "load" it. Horsepower—Forty—actual, not estimated—more at higher speed. Ignition—New Remy dual system high-tension magneto, not connected with starting and lighting system. Lubrication—Force-feed plunger pump system with constant level. Oil driven by pumps direct to main bearings. Sight Feeds—Oil indicators on dash. Clutch and Transmission Unit—Warner make. Multiple-disc clutch. Discs, Raybestos lined, running either dry or in oil. Transmission, selective type, 3 speeds forward and reverse. Shaft mounted on annular bearings. Electric Lights—Motor-driven dynamo with storage battery auxiliary. Lamps—12-inch headlights, 7-inch side lamps, 6-inch tail lamp—all electric lighted and all controlled from dash. Self-Starter—Gas starter furnished as regular equipment. Positive acting, 100 per cent. efficient. Combination electric starting and lighting motor-generator furnished at extra cost. Speedometer—The widely-advertised Stewart Model B. Top—Best mohair. Side curtains and boot of same material. Color—Black body with gray striping and gray wheels. Axles—Hess, large size. Front, I-beam, drop-forged; rear, pressed-steel, full-floating type. Both axles on annular bearings. No "axleitis" in Kentucky Thoroughbreds. Body—"Amesbilt," aluminized sheet metal. Five-passenger touring car and two-passenger roadster. Gear Ratio—3½ to 1. Tires—34 x 4 inches, Goodyear oversize "No-Rim-Cut." Springs—Special analysis steel. Front, half elliptic, 36 x 2; rear, three-quarter elliptic, 48 x 2. Steering Gear—Worm and gear type. Steering wheel, genuine walnut, corrugated, 18 inches diameter. Wheel on left side. Upholstery—Black No. 1 leather, long-grained, dull finish, hand-upholstered. Filling, best curled horsehair. Wheels—34 inches diameter, wood, artillery type, large hub flanges, heavy spokes. Rear wheel spokes bossed and bolted to brake drums. Rims—Baker "Bolted-on," demountable. Extra rim and tire holder furnished as regular equipment. Wheelbase—118 inches. Drive—Bevel gear, two Spicer universal joints, pressed steel torque arm.

They Prove Ames Quality

(6)

Ames Motor Car Company
Owensboro, Kentucky

MAIL THE COUPON NOW!

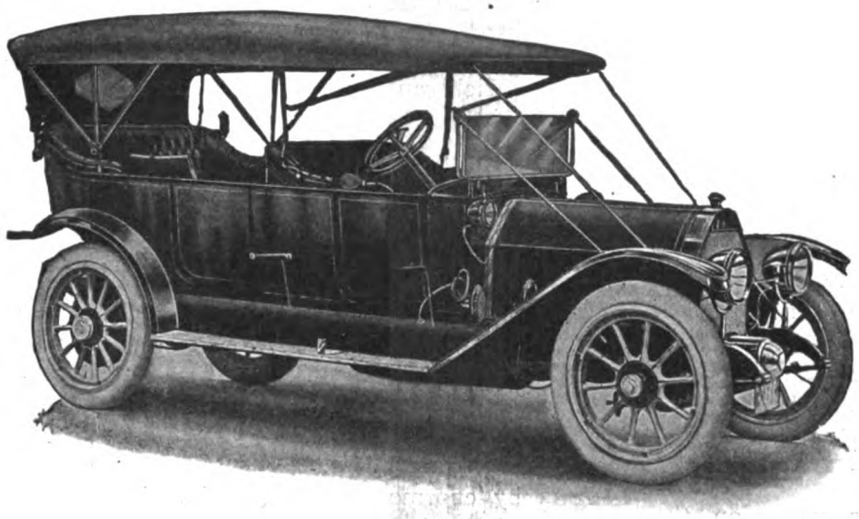
AMES MOTOR CAR COMPANY
Owensboro, Kentucky

Without any obligation on my part, send me your Exclusive Agency Proposition in the following territory .....
.....
Name .....
Address .....
.....
.....

CARS SOLD in 1912	
Name	Number
.....	.....
.....	.....
.....	.....
.....	.....

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Pullman



Are You a 10% Dealer

ANY dealer depending on his own effort will not average better than 10 per cent. of the possible sales in his territory.

A broad statement, but easy to prove. The 90 per cent. minus is the difference between INDIVIDUAL EFFORT and TEAM WORK.

The sale of AUTOMOBILES, that is, intelligent sales, require the same systematic and modern selling methods as applied to any other great industry. The individual must first be located before he can be sold, and how many DEALERS are **in touch** with the next purchaser?

In nine cases out of ten the PROSPECT starts "shopping" through the automobile district and YOUR LIVE PROSPECT is no secret; the other dealers know he is in the market and proceed accordingly.

Pullman Dealers Work Differently—They Know of the Prospect in Advance

Back of every PULLMAN DEALER is the PULLMAN SALES MAKING MACHINERY (blue print on request), a wonderfully modern selling organization that spends many thousands of dollars to locate your prospect, to get you in touch. This plan is original with the Pullman Company. It's the final answer to successful distribution. In future years all AUTOMOBILE MANUFACTURERS will be forced to extend DEALER CO-OPERATION, just the same as the manufacturers of typewriters and sewing machines. The Pullman Company does it NOW. May we submit the selling plan? Three big leaders for 1913—all fully equipped and up to PULLMAN STANDARD.

4-36	4-44	6-66
$1675	$2150	$2750

PULLMAN MOTOR CAR CO., YORK, PA.

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Cameron's Great Car Find a "40" Like It

There are 72 makers this year building Forties. For legions of motorists are demanding cars of reasonable size and power.

Each of these makers strives in some way to outdo the others. As a result, some of the most luxurious cars ever built are now in the Forty class.

And prices on "40's," since this war began, have been fairly cut in two. So some of the greatest values in Motordom now are in 40-horsepower cars.

Find if you can, among our 72 rivals, any value that compares with this.

300 Improvements

We have spent four years on the Michigan "40." We have sent out and watched 5,000 cars. We have worked out some 300 improvements.

Our engineer-in-chief is W. H. Cameron, who has built 100,000 cars.

For body designer we have John A. Campbell, whose body designs are used by kings.

Each part and detail is built by an expert, picked out by Cameron. After four years, the result is one of the greatest cars that ever went out from a factory.

Electric Lights—Four Speeds Big Tires—All for $1,585

In the Michigan "40," W. H. Cameron reveals his splendid genius.

He has given you safety, by making all driving parts sufficient for a 60 h. p. car.

He has given you economy by using extra wide tires. He has given you comfort by his 14-inch cushions, by wide, long springs, and by unusual room.

He gives you the luxury of hand-buffed leather, and a 22-coat body finish.

He gives you four forward speeds, extremely rare in cars under $3,000. He gives you electric lights.

And, by enormous output and model equipment, we have made it possible to give you all this for $1,585.

What Other Car Compares?

What other car in the whole Forty class gives you this much value?

Make your comparisons. Watch all the costly features in which makers skimp. See if any car, built by able men, makes an offer this year which compares with this. That is the way to get the utmost from this war of Forties.

Write for our 1913 catalog, and we will tell you where to see this car.

Michigan "40" $1,585

With All These Special Features:

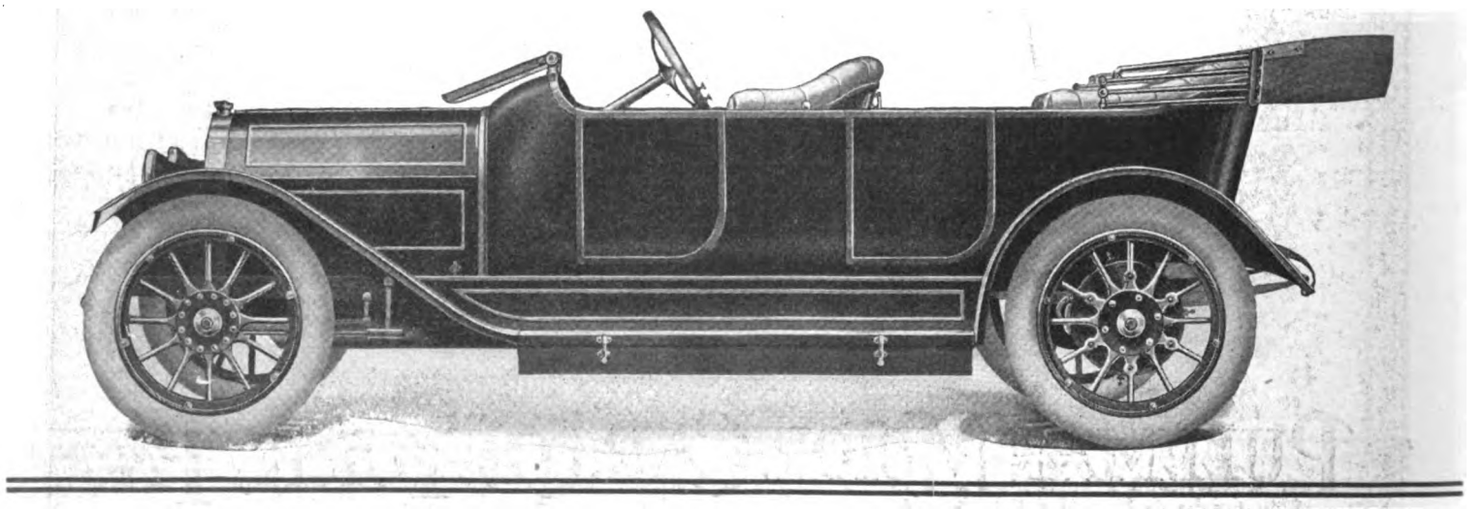
Four forward speeds, like all leading foreign cars.
Electric lights with dynamo.
Oversize tires—35 x 4½ in.
40 to 46 horsepower.
Cylinders—4¼ x 5¼.
Wheel base, 118 inches.
Rear seat, 50 in. inside.
Cushions, 14 inches deep.
Centre control.
Left side drive.
Brakes extra efficient.—drums 16 x 2¼ inches.
Springs 2¼ in. wide, 37 and 50 in. long.
Firestone demountable rims with extra rims.
Steering post, clutch and brake pedals all adjustable to fit any driver.
Body finish 22 coats.
Nickel mountings.
Electric headlights, very powerful, 12½ in. diameter.
Sidelights flush with dash.
Windshield built in.
Mohair top, side curtains and envelope.
Electric horn.
$50 4-inch Speedometer.
Foot rail—robe rail.
Rear tire irons.
Tool chests under running boards.
An average of 50 per cent overcapacity, to allow big margins of safety.

Self Starter

Either gas or electric, furnished at moderate extra price. We do not include it because men differ about the type they want.

Michigan Motor Car Company, Kalamazoo, Mich.

Owned by the Owners of the Michigan Buggy Company (118)



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The Beauty of an Automobile

Depends Upon Its Sheet Metal Parts



THE curve of the body, the dip of a fender, the shroud or even a running board not in harmony with the general design may spoil the good appearance of a costly product. And unless these sheet metal parts are strongly braced and correctly made they will rattle with the road vibrations.

Largest Users of Sheet Metal in the World

Ask the Hayes organization about your sheet metal problems. We make everything in that line for the automobile: hoods; fenders; pans; shields; shrouds; gasoline tanks; tool, battery and Prest-O-Lite boxes; mufflers, etc., and all-metal and wood-metal automobile bodies.

Not only are we the largest users of sheet metal in the world but our two enormous plants are devoted to sheet metal products exclusively.

The Hayes engineering staff will gladly give you expert advice, go over your blue prints with you, smooth out the wrinkles and, if you desire, take the entire problem off your hands. By this means you can save valuable factory space, increase production and be sure of deliveries **ON TIME.** The highly specialized Hayes factories can underbid the motor car manufacturer for his own sheet metal parts and Hayes "quality" and standardized workmanship have never been questioned.

We deliver to you in any shape or stage of completion you want—fitted to your chassis and enameled or ready for your own paint shop with anti-rust baked on.

Pass on your sheet metal problems to the Hayes organization and both save money and increase your production.

Hayes Manufacturing Company

Detroit, Michigan

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In destruction tests, actual practice and speed contests *Rudge-Whitworth Detachable Wire Wheels*

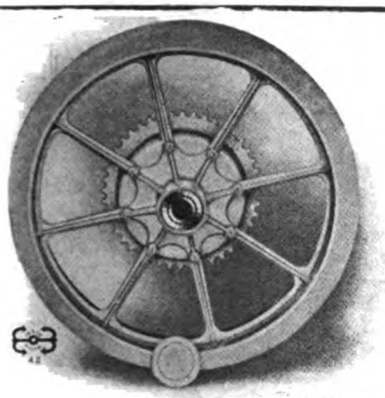
have demonstrated their superiority over the wooden artillery wheel—being stronger, lighter, more economical on tires, more flexible, adapted to any axle and elegant in appearance.

Under Rudge-Whitworth patents and methods the Standard Roller Bearing Company, of Philadelphia, will manufacture Rudge-Whitworth Detachable Wire Wheels, fitted with Houk Q D Rims, for the American trade.

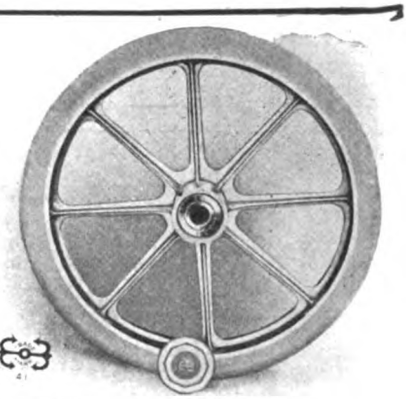
George W. Houk Co.

5003 Lancaster Avenue **PHILADELPHIA, PA.**

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SHELDON STEEL WHEEL



"Guaranteed to Outlast a Score of Cars"

The wooden wheel is passing and will shortly be relegated to the horse-drawn vehicle only—and it takes but a glimpse into the immediate future to arrive at this conclusion.

Extreme dynamic conditions, coupled with exposure to water and the burning sun, alternately, has called for something better than the best second growth hickory obtainable.

As a final evolution, designed to overcome the degenerative wooden wheel and the only partially satisfactory wire wheel, comes the SHELDON Steel Wheel, a light, solidly constructed, imperishable device that offers advantages plain to engineer, dealer and layman.

The engineering features of the SHELDON Steel Wheel afford an economic disposition of material to counteract tremendous side pressure, providing against side strains in taking a corner under load or striking a curb "side on." There are no flange bolts to come loose, causing quick destruction. Time, temperature and shock cannot affect the solid steel construction in the slightest degree.

The SHELDON Steel Wheel offers a pronounced saving in tires through its superior resiliency, its lightness and ability to radiate frictional heat—and frictional heat is a constant and ever-growing menace to the life of the tire.

The SHELDON Steel Wheel makes starting easier and the truck more accelerative.

Under strains in which the wood wheel would collapse beyond repair, the SHELDON Steel Wheel can be doubled up and straightened out again.

These are bare facts in the case. The subject is long and ought to be of intense interest to truck manufacturers. We are now in a position to equip commercial cars right now. Our facilities for prompt deliveries are as great as a tremendous organization can make them. Write for the details.

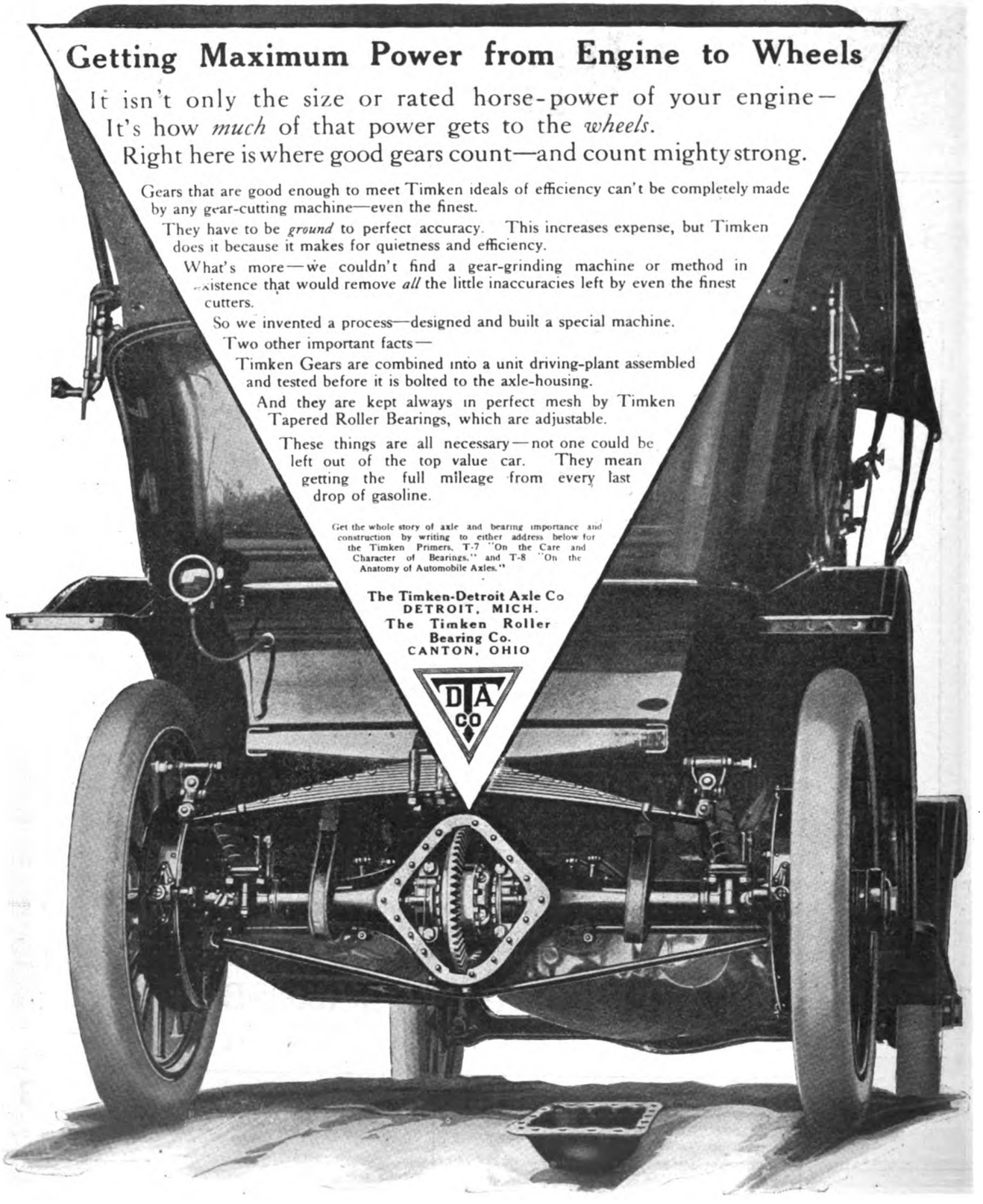
SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

Detroit Branch:
1215 Woodward Avenue

Chicago Branch:
68 East 12th Street

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TIMKEN
AXLES & BEARINGS



Getting Maximum Power from Engine to Wheels

It isn't only the size or rated horse-power of your engine—
It's how *much* of that power gets to the *wheels*.
Right here is where good gears count—and count mighty strong.

Gears that are good enough to meet Timken ideals of efficiency can't be completely made by any gear-cutting machine—even the finest.

They have to be *ground* to perfect accuracy. This increases expense, but Timken does it because it makes for quietness and efficiency.

What's more—we couldn't find a gear-grinding machine or method in existence that would remove *all* the little inaccuracies left by even the finest cutters.

So we invented a process—designed and built a special machine.

Two other important facts—

Timken Gears are combined into a unit driving-plant assembled and tested before it is bolted to the axle-housing.

And they are kept always in perfect mesh by Timken Tapered Roller Bearings, which are adjustable.

These things are all necessary—not one could be left out of the top value car. They mean getting the full mileage from every last drop of gasoline.

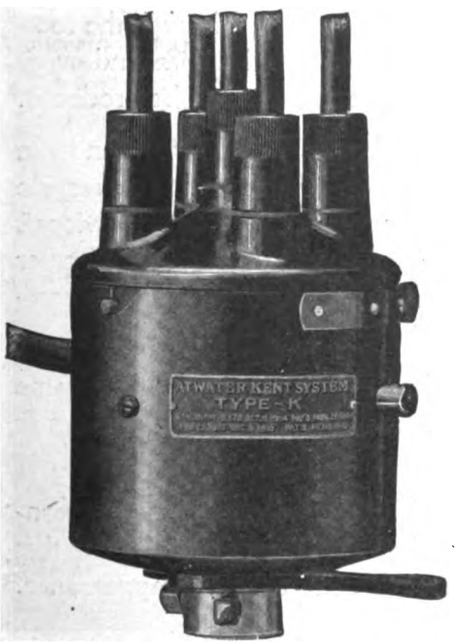
Get the whole story of axle and bearing importance and construction by writing to either address below for the Timken Primers, T-7 "On the Care and Character of Bearings," and T-8 "On the Anatomy of Automobile Axles."

The Timken-Detroit Axle Co
DETROIT, MICH.
The Timken Roller Bearing Co.
CANTON, OHIO

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The New Atwater Kent Ignition System

With Automatic SPARK ADVANCE



DISTRIBUTORS

New York.....E. J. Edmond Co.
Chicago.....Motor Car Supply Co.
San Francisco, Chanslor & Lyon M. S. Co., Weinstock-Nichols Co.
Milwaukee.....Julius Andrae & Sons.
Omaha.....Omaha Rubber Co.
Chattanooga.....Sanford Bros.
Dallas.....Fisk Co. of Texas.
Denver.....Auto Equipment Co.

Of extreme interest to every motorist

THE Automatic Spark Advance feature of the Type "K" Atwater Kent System is a long stride forward in ignition practice.

With this device, the control of the spark timing is entirely automatic (although the hand lever can be used if desired). This means that the spark is always properly timed to get the greatest possible power from the motor at any speed from three to seventy miles per hour.

No human mind can follow accurately the speed variations in an automobile motor and accordingly regulate the spark setting to get the best results.

The automatic spark control of the Atwater Kent System is more than human in its performance—it is sensitive to the slightest variation in speed—immediate in its response and positive in its action. The operator can forget his spark lever, knowing that his spark is being better regulated than he can do it himself.

The increased safety due to the automatic retarding of the spark for starting is alone more than sufficient to commend it to the modern motorist.

The Type "K" System is especially adapted for use in conjunction with lighting and starting equipment, or as sole ignition in place of the high-tension magneto. We regard it as being fully up to the high standard of merit for which Atwater Kent equipment is known.

Interesting Booklet D and detailed information sent upon request.

Atwater Kent Mfg. Works

4940 Stenton Ave. Philadelphia, Pa.

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"The Horn that's Made for the Discriminating"

TUTO HORN

THE TWO TONE HORN

Fit For the Finest Cars.

THE clean-cut, elegant design of the TUTO Horn harmonizes well with the simple lines of 1913 cars and this together with high grade workmanship and finish makes the TUTO the ideal horn for any car, high priced or otherwise.

¶ The TUTO horn is the only electrical warning device complete in every little detail, with its mountings in keeping with the permanent portions of a fine car.

¶ There are protected coverings for the cord where it extends up the steering column to the button, escutcheons to cover the bushings which go through the footboard or dash, and also for the openings where the cord goes to the horn, and every screw and clasp is provided so that a finished and permanent job can be produced.

¶ All of these fixtures have been specially designed for the TUTO horn and can be procured only with TUTO equipment, yet in spite of this fact, we receive orders for these TUTO fittings from car manufacturers, dealers and individuals all over the country for use in connection with electric warning signals of other makes which were purchased before the customers were acquainted with the completeness and excellence of the TUTO horn.

¶ There can be no better recommendation for the TUTO horn, for these same people express their preference for the TUTO, its superior operating qualities as well as the completeness of its fittings.

¶ To avoid disappointment, specify the complete TUTO horn and have a warning signal which is adequate for every service and which comes complete, so that it can be installed on the highest finished car, without detracting from its appearance.

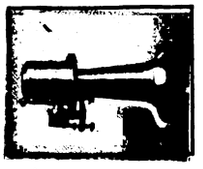


TUTO Horn, $25.00

The Dean Electric Co.

260 Taylor Avenue, Elyria, Ohio

"Look for Dean where Quality's seen"



TUTO-ETTE $17.50

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WHY DO THEY SMILE?

IT'S A Knox "LITTLE-SIX"



"IF YOU HAVE NEVER DRIVEN ONE UP A HILL YOU HAVE MISSED HALF THE SPORT OF MOTORING"

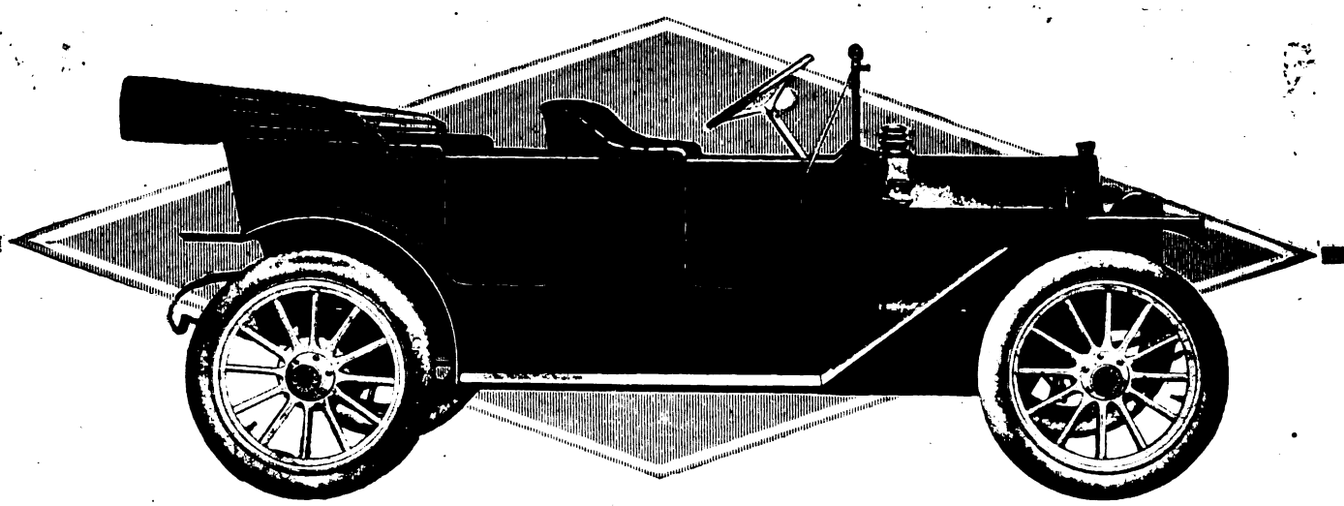
CATALOGUE MAILED ON REQUEST

KNOX AUTOMOBILE CO.

SPRINGFIELD, MASS.

NEW YORK BRANCHES CHICAGO

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EMPIRE

"The Little Aristocrat"

Style, Distinction and Character in every line. Thoroughbred Speed, Power and Strength in keeping with the unusual quality of its design. Completely Equipped $950.00 with

Mohair Top,	**Windshield,**	**Prest-O-Lite Tank,**	**Speedometer,**
Top Envelope,	**Robe and Foot Rail,**	**Head, Side and**	**Tire and Tool Kit,**
Storm Curtains	**Pump and Jack**	**Tail Lamps**	**Eisemann Magneto**

THE $950.00 completely equipped Empire Five Passenger Touring Car is indeed a "LITTLE ARISTOCRAT." Everywhere it is winning its way with the intelligent, cultured class, who demand a car of moderate size and price, and *who insist on having a real car*, built of quality materials, and honestly constructed.

Aside from its alluring beauty and style, which impell admiration, THE EMPIRE has proved its durability and efficiency for continued service under the most exacting conditions.

Steep hills, deep mud or sand never impede the "LITTLE ARISTOCRAT." Its surplus power converts road obstacles into *opportunities for demonstrating its efficiency*.

Its rugged construction and sound materials account for its rare endurance and stability, even under cases of excessive misuse.

Even *we* underestimated the high merit and popular appeal of the EMPIRE Five Passenger Touring Car. We knew that in time "THE LITTLE ARISTOCRAT" would come into its own kingdom. We foresaw increased demand. But we were amazed, *when necessity*, two months ago, *compelled the establishment of a second factory*. Our increased facilities now make it possible to supply the big demand.

If *you* are in the market for a car of moderate size and price, send for our new illustrated "LITTLE ARISTOCRAT" Folder, which describes THE EMPIRE completely and in detail.

DEALERS PROPOSITION ON REQUEST

THERE IS SOME DESIRABLE TERRITORY OPEN

EMPIRE AUTOMOBILE COMPANY, Indianapolis, U. S. A.

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Lancia
Dealers Make Good

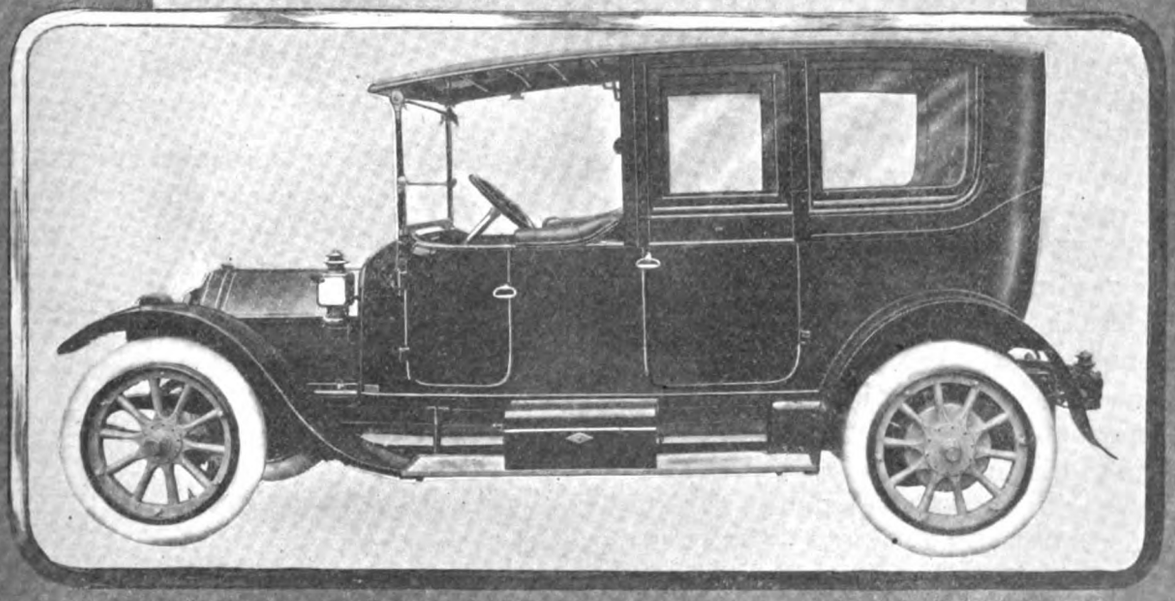
In handling the Lancia, the dealer automatically creates an exclusive and most desirable selling connection—and the fact that he may be surrounded by many American agencies lends still *more* prestige to his own proposition.

You, Mr. Dealer, can sell Europe's most exclusive product at American prices and you can, on this basis, offer Lancia cars and equipment to those who are fastidious not only in regard to rakish, unusual European design, but who also understand the actual service value of a car made in Europe, where steel making is an exact science and where engineering genius of the world has reached the high water mark.

Canvass your list of prospects—you can interest plenty of them in a very unusual and distinctive type of motor car, with racing and endurance records back of it that are beyond cavil.

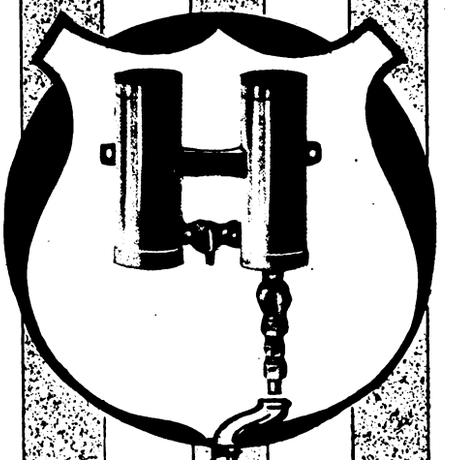
We await your inquiry and we promise our selling co-operation.

ADAMS-LANCIA CO.
235 West 58th St., New York



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DEALERS Your Trade will want this as soon as they see it



Its a fuel saver—trouble saver—A Primer and engine cleaner

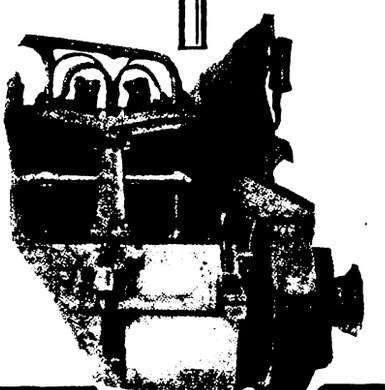
The National Compound Mixer and Primer is one of the most valuable and necessary adjuncts to any car—one that not only saves from 10 to 40 per cent of gasoline but which actually increases the engine horsepower from 10 to 40 per cent.

The National Compound Mixer and Primer

is not an experiment—it is a well-tried and proven piece of apparatus now in use on thousands of cars—and it is one that you can well afford to investigate with a view of selling it to your trade.

This device, shown here, furnishes air to the imperfect mixture before it enters the cylinders in exactly the right proportion to utilize the power in every molecule of gasoline.

Here is where speed, power and economy are conserved, for it is a proven fact that ordinarily a large proportion of gasoline is simply burned up inside the engine and not exploded. With the National Compound Mixer installed, combustion is complete, with more miles per gasoline to the engine's credit.



You Can Instantly Prime the Engine

by simply turning the primer valve located in conjunction with the mixer on the dash, for as the gasoline is drawn from the primer into the cylinders, a quantity of air is taken from the mixer, insuring an explosive mixture—this primer can also be utilized in cleaning the engine when desired.

A Liberal Dealer Proposition

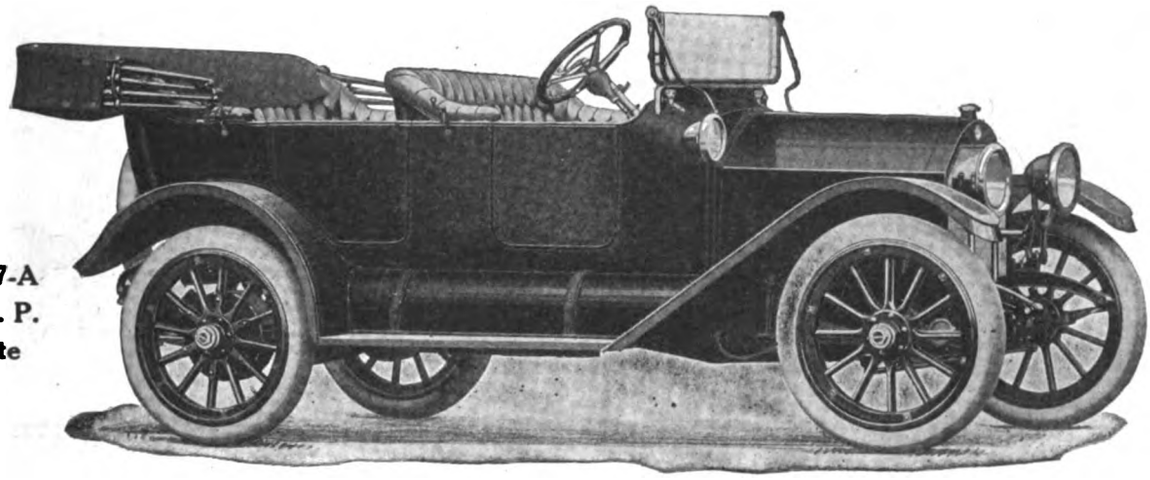
awaits live wire members of the trade who can appreciate why the National Compound Mixer and Primer will appeal to car owners.

You don't have to worry about the installation. This can be accomplished in 20 minutes. You don't have to worry about your commission, because it is liberal. Write today.

NATIONAL
Manufacturing Co.
Kalamazoo Michigan

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1913 Marion 37—A $1475



Model 37-A
30-40 H. P.
Complete

Good Roads, Clay Roads, Hilly Roads This Car Is Built for Them

FOR ten years Marion cars have been making enviable records in every kind of service. Now comes the best and finest Marion of them all. It is a big, handsome, faithful 30-40 horsepower five passenger touring car, built for cross country enjoyment. It will be hard for you to find roads which will thoroughly test its pulling strength. It is built for the very tasks to which you will put it. Solid to the core, it is just the car for the up-to-date motorist.

Built for wear first of all, and then equipped with every comfort and convenience, this new model of the famous Marion line is matchless. Electrically lighted, self-starting, constructed with lots of room, with style and beauty apparent in every line, it makes Marion ownership an appreciated pleasure.

It is sturdy throughout. The motor, cast in pairs, with all valves enclosed, is powerful, efficient, and economical. It will give you no trouble. It has three-point suspension. The pressed steel frame is strongly reinforced. The four double acting brakes are large and effective. The rear system, with its expensive bearings, is unusually rugged and is double trussed.

These few items indicate the staunchness of the Marion car as a whole. It presents to you a splendid opportunity to own, for a moderate price, an automobile with the appearance and features of the most expensive cars. Moreover, ownership of a Marion is an inexpensive pleasure.

For those who want a larger and more powerful car we have the electrically starting 48-A, the Marion de luxe, at $1850. The Marion "Bobcat," $1425, is the snappiest speed car of the year.

We offer to automobile dealers, or to business men entering the trade upon a substantial basis, the fairest sales agreement ever written. Ask us about territory.

Big Features Establish Big Value

Disco Self Starter	Dynamo Electric Lighting System	Ample Power
Prest-O-Lite Tank	Q. D. Demountable Rims, One Extra	Long, Easy Springs
Warner Speedometer	Mohair Top, Boot, Storm Curtains	Comfort, Dependability
Nickeled Trimmings	Brewster Green or Deep Wine Color	Quietness, Simplicity
Tools, Tire Irons	Plate Glass Windshield	Deep Upholstering
Center Control	Concealed Tool Boxes	Plenty of Room

A new illustrated folder in colors has just gone to press. The edition is limited—for immediate distribution, to fill early requests. Send for one now.

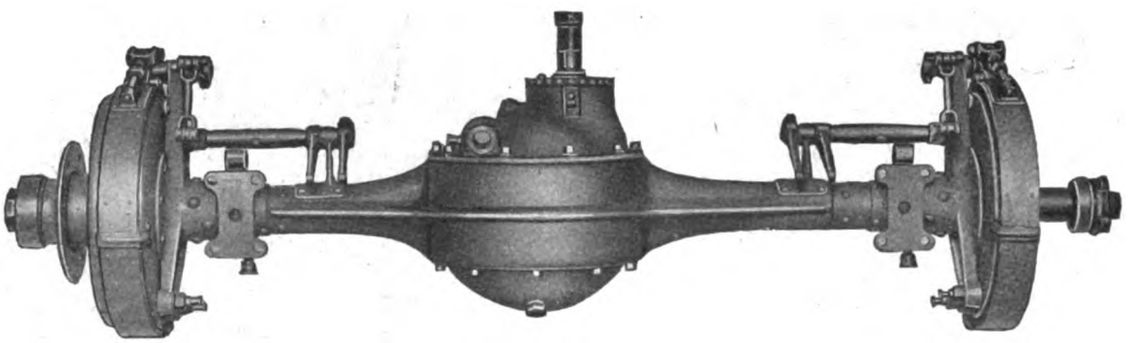
THE MARION MOTOR CAR COMPANY, 918 Oliver Avenue, Indianapolis

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American American

Fight Friction and Win Power With

American Axles



In every field of mechanical endeavor there is an endless fight to secure maximum power by a constant warfare upon friction.

In automobile construction the greatest advance along this line has been shown in *American Axles*.

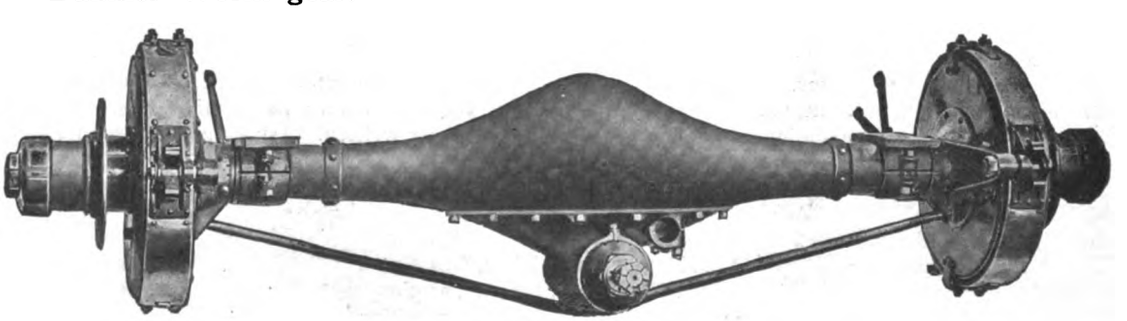
They make rated horsepower real horsepower by eliminating the chief frictional load between the motor and the drive wheels, which, in a car, is always to be found at its axle.

American Axles lead all others by reason of: (a) perfection of their design; (b) highest quality of all materials employed; (c) extreme accuracy of their workmanship.

American Axles are triumphs of refinement, achieved without loss of strength or reliability, largely through the use of exclusive, patented features.

It is to your interest to make sure that the car you buy shall give you all the advantages inherent in *American Axles*.

And in this line only have you the option of Bevel Drive gear or Lanchester-Daimler Worm gear.



THE AMERICAN BALL-BEARING CO.

Edgewater Park and L. S. & M. S. Ry. CLEVELAND, OHIO

American

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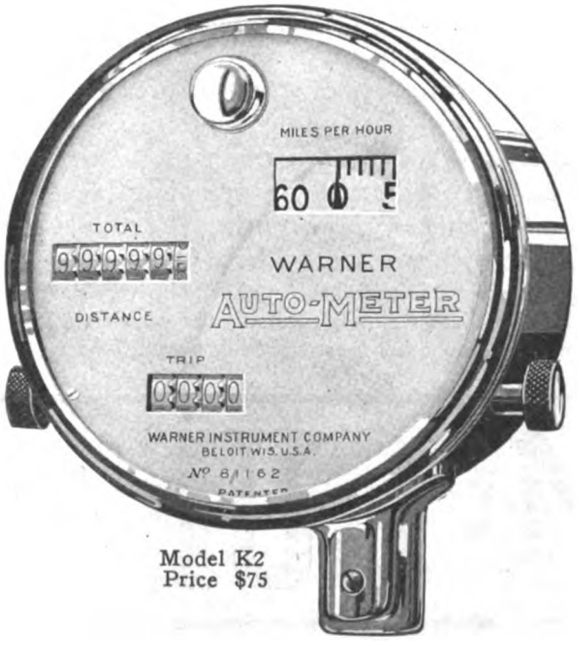
WARNER
AUTO-METER

These Cars Now Are All Equipped With the Famous Warner

Ahrens-Fox	Grand Rapids Truck	National	R-C-H
American	Grant	(in combination)	Republic
Armleder	Haynes	Ohio Electric	S. G. V.
Austin	Hupp-Yeats	Oldsmobile	Simplex
Cadillac	Jenkins	Overland	Stafford
Church Field Electric	Knickerbocker	Packard	Staver
Cino	Lozier	(in combination)	Stearns
Cunningham	Marion	Patterson	Stevens-Duryea
Columbia	Marmon	Pierce-Arrow	Stoddard-Dayton
De Launy Belleville	Matheson	Pilot	Vera Six
Flanders	McFarlan		

The men behind these well known cars choose the Warner Auto-Meter in preference to all others. Their selection is your guarantee of reliability. This only further establishes the fact that the Warner Auto-Meter is the most highly developed speed and mileage indicator in the world.

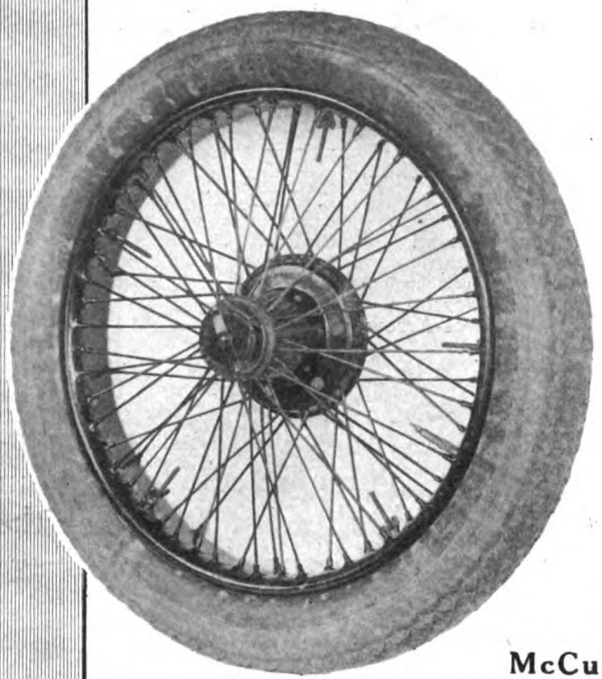
The Warner Instrument Company
Beloit, Wisconsin



Model K2
Price $75

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Stutz right rear McCue Wire Wheel goes through Vanderbilt and Grand Prix races (700 miles) with original tire and original air.

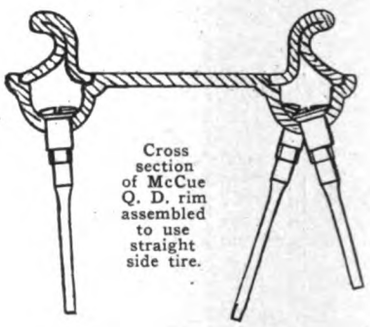


Herewith is shown a reproduction of the right rear McCue wire wheel taken from the Stutz car which made such a remarkable showing in the Vanderbilt and which was the only American car to finish the Grand Prix, in which race it won third place. This actual photograph, which has not been retouched, shows the condition of the tire after practically 700 miles of racing use. The tire is scarcely worn and unquestionably would stand up for a great many more races if mounted on wire wheels.

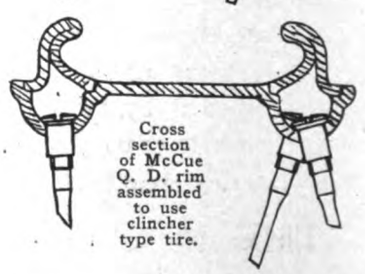
As a matter of fact in both races the Stutz car only changed two tires, the opposite rear to this one, in each race. And as we told in previous advertising copy neither one of these tires really needed to be changed. The car stopped for supplies and as a precautionary measure one rear tire was changed in each race. Contrast this with the wooden wheel equipped cars, many of which changed from 15 to 20 tires in each race and you can realize readily that there has been no exaggeration in the claims of tire saving ability for wire wheels.

McCue Wire Wheels May Be Had Equipped With Q. D. Rims

As may be seen by the illustration herewith, the McCue Company is now supplying Q. D. rims on their wire wheels. The general all around advantage of the McCue Q. D. Rim is that that portion of the wheel which is presented to the tire is perfectly smooth and flat. The spoke nipples are inserted in grooves which are rolled into the rim. Just incidentally these grooves add a considerable degree of stiffness to the rim as well as providing means of preventing the nipple head from coming in contact with the tire. These Q. D. rims, of course, are furnished on the detachable wheel. Another point very much in favor of McCue Q. D. Rims is that by simply reversing the position of the rings the same set of rims may be used either for straight side tires or for the clincher type.



Cross section of McCue Q. D. rim assembled to use straight side tire.

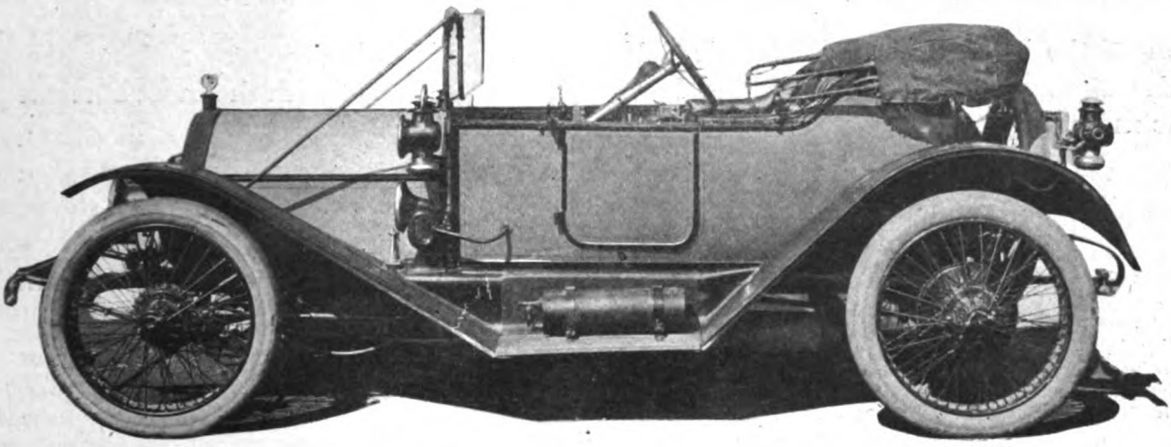


Cross section of McCue Q. D. rim assembled to use clincher type tire.

McCUE WIRE WHEELS

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Firestone-Columbus cars are also equipping with wire wheels, as shown by the illustration of the five-passenger Model 82E touring car, below.



Another prominent American concern that is taking up wire wheels is the Columbus Buggy Co., makers of the Firestone-Columbus car, which, as stated above, is equipping certain models optionally with McCue Wire Wheels.

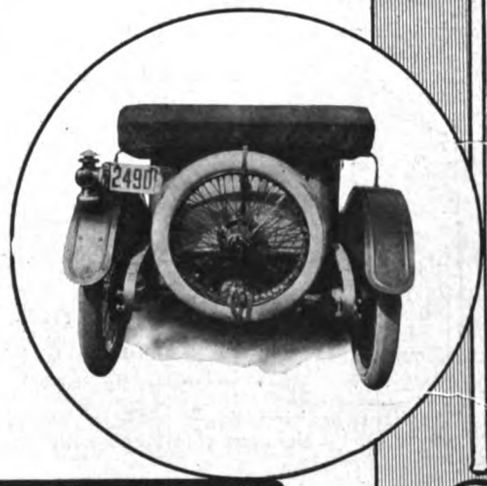
There is now a long list of American manufacturers who are using wire wheels for 1913 and this list is increasing daily.

Every dealer in the United States is interested in having wire wheels adopted because wire wheels in use mean more cars in use. If your manufacturer does not grasp the tremendous opportunity before him, help yourself by insisting upon having wire wheels upon the cars you sell. The chances are your manufacturer has simply neglected the matter and will be glad to comply with your request for him to do so. Wire wheels are here to stay and it is simply a question of whether you will reap the reward by being early in the game or whether you will be forced into it by your competitors.

Write that letter today.

THE McCUE COMPANY, Buffalo, New York

The illustration below shows the method of carrying the spare wire wheel employed by the Firestone-Columbus company.



McCUE AXLES

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Important Announcement

The Dreadnought Moline M-40 now equipped with Electric Self-Starter and Lighting System—each operating independently of the other.

With the installation of the Ward-Leonard Electric Self-Starter and Lighting System, and our new standard equipment, the famous Dreadnought Moline M-40 at once takes rank with the most efficient of foreign and domestic motor cars.

We cannot place too much emphasis upon the efficiency of the Electric Starter and Lighting System, nor upon their installation as independent units.

Operates the same as our Double Independent Ignition System.

The advantage of which lies in the fact that each system is absolutely independent of the other. If anything should happen to the magneto the car can be operated on the time distributor system. Or upon the magneto if the distributor should get out of order.

Each system operates on a separate set of plugs. With the dual system, commonly used, the distributor of the magneto is used to distribute the battery current for starting. As only one set of plugs are used, if anything should go wrong with the magneto the car is laid up until the repair is made. We avoid this trouble with our Double Independent Ignition System by furnishing a set of dry cells for operating the distributor system—so that we are entirely independent of the lighting system for ignition.

The independent system is also used on our Electric Starting and Lighting Mechanism.

The dynamo for producing the current is entirely independent of the motor that cranks the engine. So if anything happens to the starting motor, the engine can still be started by hand cranking and the electric system is not disrupted. Where the dynamo and engine are one and the same an accident renders useless not only the starting but the lighting mechanism—a serious matter if that should happen at night.

Makes both Dynamo and Motor most efficient mechanically and electrically.

It is a well-known fact that it is impossible to convert a low output dynamo into a high output motor and get proper efficiency out of the motor. By building them as separate machines it is possible to make both motor and dynamo as efficient mechanically as it is possible to build these small units.

The weight of this system is much lighter than the Combination outfit.

A further advantage is—With our system, if anything should happen to the dynamo we can start a number of times and light for a considerable length of time on the charged battery. With the combination system it would be impossible to start at all with the electric starter, under similar conditions.

We have started the Dreadnought Moline M-40 hundreds of consecutive times with this starter.

This is a proof of unexcelled efficiency. Its mechanical perfection results in high efficiency because the device is fundamentally right. Mechanical perfection would be an idle boast if the idea was not theoretically sound. We unhesitatingly affirm that you will find our system as described here to be theoretically sound, mechanically perfect and of the highest attainable efficiency.

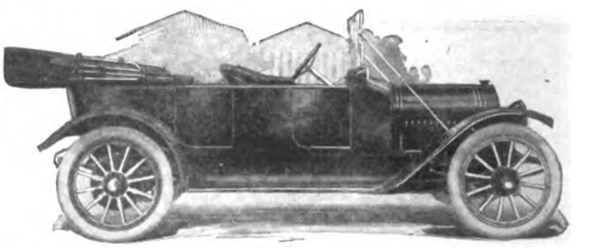
Dreadnought Moline M-40—$1950

Now Completely Equipped

Standard Equipment: Ward-Leonard Electric Self-Starter and Lighting System, Six Lights, Black Enamel with Nickel Trimmings, including Dash Illuminator, Dynamo and Storage Battery. Double Independent Ignition System. One Piece Glass Windshield. Firestone Q. D. Demountable Rims with extra Rim. Moline Silk Mohair Top and Top Cover. Speedometer. Tire Irons on Rear. Foot Rail. Robe Rail. Gasoline Gauge on Dash. Complete Tool Equipment, including Pump and Jack, Tire and Repair Kit.

Price, Fully Equipped, $1950

We have a particularly interesting proposition for dealers—and in certain sections—open territory where a good demand is now being created. We will be glad to send you our catalog and to write you personally any further information you desire. Our printed matter will interest you and our letters will be personal.



MOLINE AUTOMOBILE COMPANY

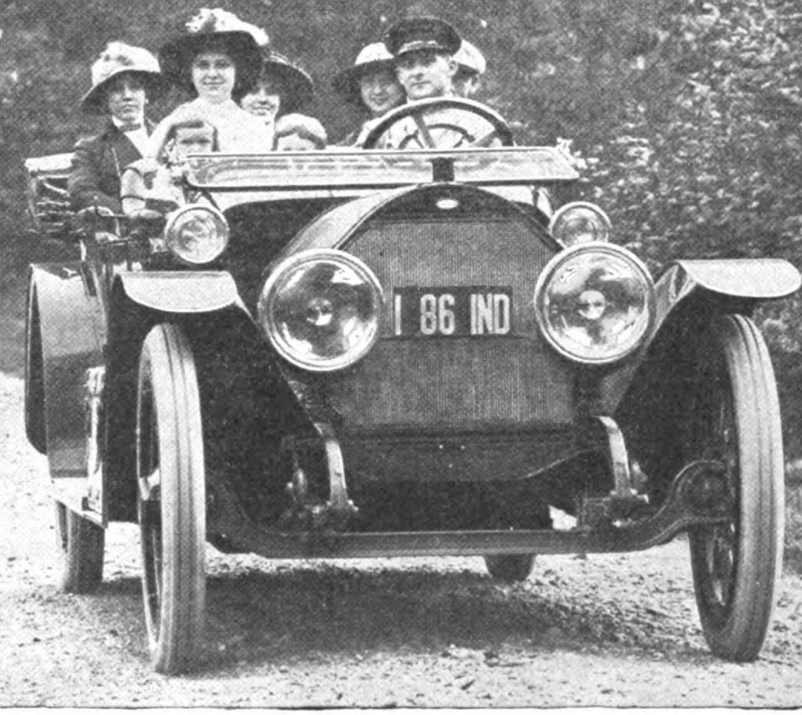
107 Keokuk Street **East Moline, Illinois**

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MARMON

"The Easiest Riding Car In The World"

THE PERMANENCE of the manufacturer guarantees the service of the car. The wonderful reputation the Marmon has attained by comparison with the best and highest priced cars the world over is the result of over sixty years of experience in the manufacture of high class machinery. The distinction of Marmon manufacture extends through every step from the engineer's drawing to the completed car—all in one factory. The permanence of this institution is a guarantee that Marmon cars shall continue year after year to give the maximum of luxurious and ecomomical service.



The Marmon "32"

30-40 h.p., 120-in. wheelbase, self starting, dynamo lighting, with body types to meet every requirement and corresponding equipment, $2850 to $4100

Detailed Information on Request

Nordyke & Marmon Co.

(ESTABLISHED 1851)

Indianapolis, Indiana

Sixty Years of Successful Manufacturing

The Marmon Six

48-80 h.p., 145-in. wheelbase, self starting, dynamo lighting, with body types to meet every requirement and corresponding equipment, $5000 to $6350

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"In Exchange for your empty tank, accept only a genuine Prest-O-Lite Tank, filled with genuine Prest-O-Lite Gas."

This is the message that is going to Prest-O-Lite users everywhere.

In it there is a hint for the wise dealer, as well.

You know that no imitator of the Prest-O-Lite Tank has ever successfully imitated Prest-O-Lite Service.

You also know that no imitator ever made good the large claim "more gas and better gas than Prest-O-Lite."

So does your customer.

Imitations are getting harder and harder to sell. There are now mighty few dealers trying it.

Most of those who yielded to the old but ever tempting claim, "More Profits," have come back home.

To the dealer who is still trying to force imitations on people who won't have them, perhaps because he has money tied up in them, we can only say:

"The sooner you resume earning your good old Prest-O-Lite profit, the sooner you will make your income what it used to be."

The Prest-O-Lite Co. 287 E. South St. Indianapolis, Ind.

Branch Offices and Service Stations in all principal cities. Charging Plants in all parts of the country. Extensive foreign service.

Exchange Agencies Everywhere



Constructed along proven-correct scientific lines—on the centrifugal principle—the

CORBIN-BROWN SPEEDOMETER

The Speedometer of *Permanent* Accuracy

is proof against temperature changes. It is absolutely accurate at all times—during the torridity of mid-summer as well as during the zero weather of winter.

Sold by leading garages and accessory dealers everywhere.

Write today for Catalog and price list.

CORBIN SCREW CORPORATION DIVISION

(AMERICAN HARDWARE CORPORATION)

213 High Street **NEW BRITAIN, CONN.**

BRANCHES: NEW YORK CHICAGO PHILADELPHIA

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BOSCH

MAGNETOS AND SPARK PLUGS

EVERY car, the specifications of which include the Bosch Magneto, is equipped with long life and permanent accuracy at its most vital point. The experience that is back of nearly a million and a half magnetos assures you perfectly effective and absolutely reliable ignition.

IF your engine persists in misfiring, possibly it needs better spark plugs. Let us tell you about a better plug; a plug that withstands hard knocks, overheating and excessive oiling. Bosch Spark Plug literature and "Locating the Spark Plug" will interest you. Send for it today.

No Matter What Car You Buy IT Needs a Bosch Magneto

Specify Bosch Spark Plugs. As Essential as the Bosch Magneto

Write for Literature Today

BOSCH MAGNETO CO., 223 W. 46th Street, New York





Kelly-Springfield Tire Company
20 Vesey St.
New York

Branch Offices in
New York
Chicago
Philadelphia
Boston
St. Louis
Detroit
Cincinnati
San Francisco
Los Angeles
Cleveland
Baltimore
Washington
Seattle
Atlanta
Akron, O.
Buffalo

Boss Rubber Co. Denver, Colo.
Appel & Burwell
Rubber & Tire Co. Dallas, Texas
Todd Rubber Company New Haven, Conn.
Bering Tire & Rubber Co. Houston, Texas
The Hearn Tire & Rubber Co. Columbus, O.

Kelly-Springfield
Automobile Tires

As a matter of fact, dependable tires are the basis of real automobile usefulness.

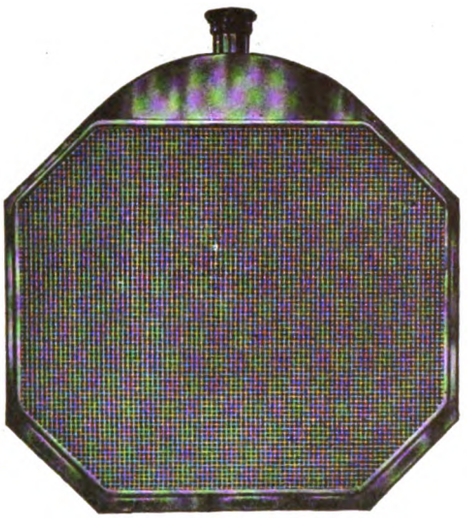
Kelly-Springfield road mileage is a few thousand miles higher than the average. That reduces the cost of the tire.

The easy resiliency of Kelly-Springfield Tires is one phase of our argument. But staunchness and durability, born of the best rubber composition, skill and the incentive to make good tires better, offer a reason even more convincing—wear.

When you buy Kelly-Springfield Tires you are not experimenting. We have done that for you.

Kelly-Springfield Tire Company, 20 Vesey Street, New York

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Mayo Radiators

are standard on a number of well known makes of cars—in all instances, cars in which quality predominates.

¶ Mayo Radiators offer a maximum of radiating service and are immune to leakage except in case of accident.

¶ We have been building these radiators for years and we offer them as models of correct design and construction.

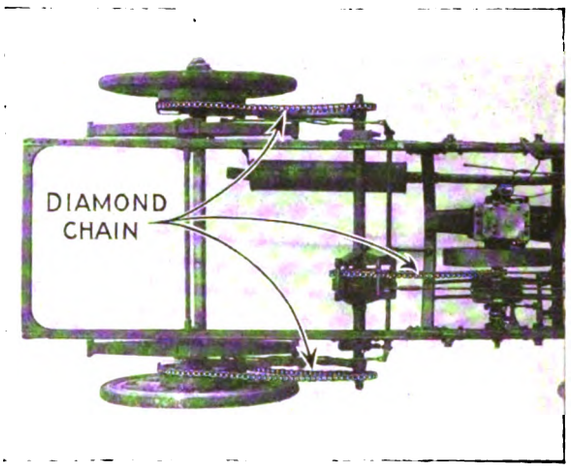
¶ Every radiator is guaranteed to live up to the requirements set for it and we stand back of this guarantee.

¶ Let us give you some facts concerning the system and its application.

[redacted]

Mayo Radiator Co.

NEW HAVEN, CONNECTICUT



Diamond Chain Satisfaction



For many years the Reo Motor Car Co. have been constant large users of Diamond Chains, and now Diamond Chains are used as standard equipment on all their commercial vehicles.

In manufacturing Diamond Chains the closest attention is given to combining in material and construction those essential qualities which have made our chains so satisfactory on Reo cars — great strength and durability.

Our treatise "Power Chains and Sprockets" contains interesting and valuable information on the subject of chain drive for Trucks.

Write for Free Copy.

Look for the

TRADE ◇ MARK

DIAMOND CHAIN AND MANUFACTURING CO.

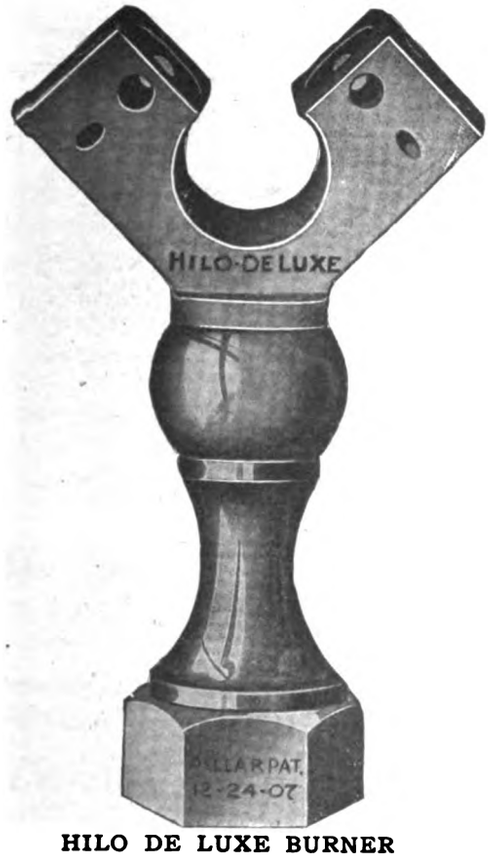
155 W. Georgia Street Indianapolis, Ind.

CAPACITY 8,000,000 FEET PER YEAR

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The Largest Automobile Supply House in America

15—STORES—15

This is a Turn-Down Burner, i. e., you can reduce the size of the flame without carbonizing the burner.

The Greatest Gas Economizer and the Longest Lived Burner made.

Throw away your old-style burners and send us 80 cents for a pair of these.

Price 40 cents each, packed in individual boxes.

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The Most Complete of the Kind. **Mailed Free on Request.**

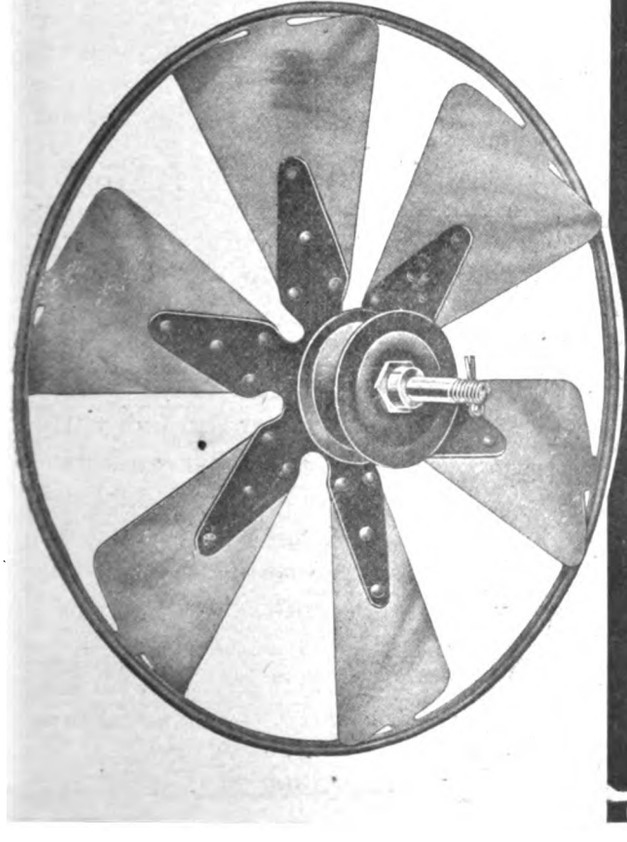
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1000 Daily

One-Piece Blade Radiator Fans

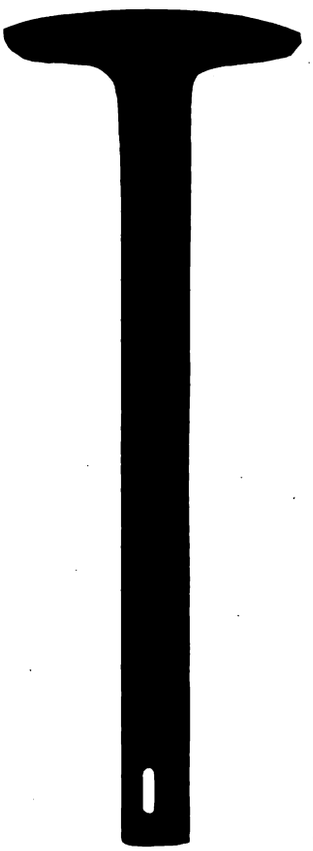
Protect yourself where deliveries are assured, quality right and a saving made because of an assortment of standard parts from which you may draw.

We Are Fan Specialists

The Sparks-Withington Co.

JACKSON, MICH. and WALKERVILLE, CAN.

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THINK THIS OVER - very carefully and read it twice, if necessary.

Is there any part of an automobile engine, or any other gas engine, that is more important to its efficiency than a Valve?

Your engine leaves the factory running smoothly and sweetly tuned up to its highest power. Perhaps the valves pit—warp - go out of shape fail to hold compression. Then the power diminishes, and what can be more aggravating to the driver, who has known the fullness of the pulling power of his motor, than to have it grow less and less?

You cannot slight this part by putting in an inferior product—valves that will give trouble, or even break from inexperience in their manufacture—valves of unsuitable material, not suitably heat treated.

Too much is at stake, and a slight extra cost at the outset, which is the exception, may save you many times over a probable later expense.

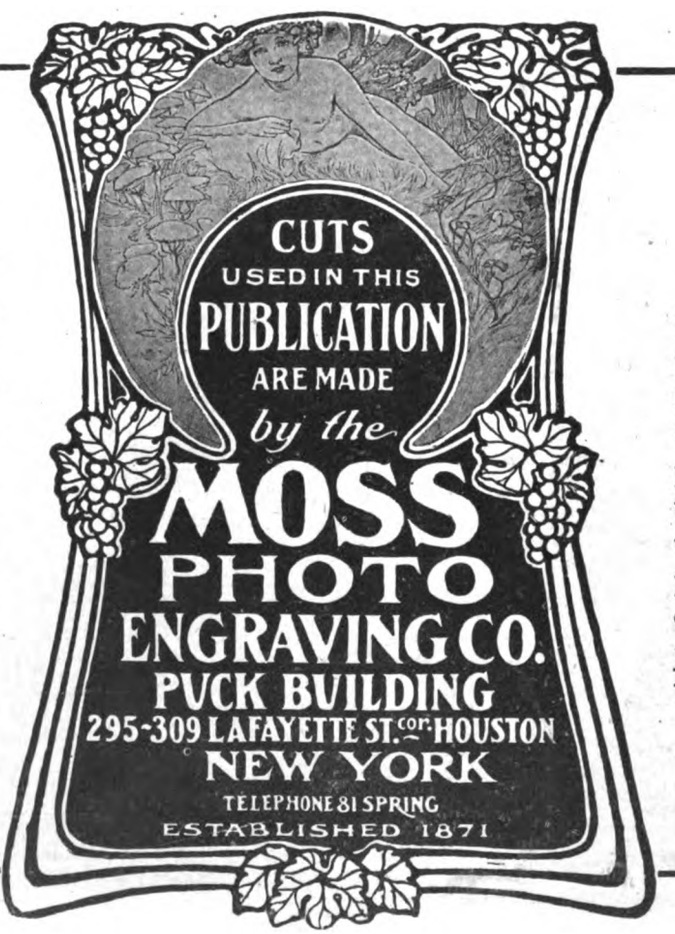
This Company, with the experience of many years as a guarantee, will furnish you with properly made valves, of the materials best adapted to your requirements.

Not only QUALITY, but efficient SERVICE is a factor—surely there is a satisfaction in getting the kind of work you want—when you want it.

THE ELECTRIC WELDING PRODUCTS COMPANY
CLEVELAND, OHIO

OUR REPUTATION

is based on the fact that we have been handling the engraving of several prominent trade and general publications for years to the utmost satisfaction of both publishers and advertisers



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The quality of work turned out by this plant is re-inforced by our facilities for deliveries as promised. Your work will be put through with the same care and dispatch given to publishers whose work must be right—and "right on the dot."

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Remy Magneto

Exchange Your Old Magneto for a New Remy

IT will cost you practically no more than what you will be forced to pay out for constant repairs on your present ignition system. A new Remy will give your car new life. Here is our exchange proposition:

	List Price	Allowance	Net to You
2-Cylinder Remy Magneto with Coil, complete.....	$46 00	$ 9 20	$36 80
4-Cylinder Remy Magneto with Coil, complete.....	50 00	10 00	40 00
6-Cylinder Remy Magneto with Coil, complete.....	52 00	10 40	41 60

Allowance made for any make of Magneto.

Remy Electric Company
Anderson, Indiana

BRANCHES—New York, Boston, Detroit, Chicago, Kansas City, San Francisco, Indianapolis.

SERVICE STATIONS—Albuquerque, Augusta, Baltimore, Charlotte, Cincinnati, Cleveland, Denver, Dallas, El Paso, Houston, Jacksonville, Louisville, Memphis, Minneapolis, New Orleans, Nashville, Norfolk (Va.), Omaha, Los Angeles, Philadelphia, Pittsburgh, Portland (Me.), Portland (Ore.), Rochester, San Antonio, Seattle, Spokane, St. Louis, Syracuse, Utica, Washington (D. C.)

CANADA—Toronto, Winnipeg, Calgary, Hamilton, Vancouver, Montreal.

Niagara

We Back Our Dealers to the Last Ditch

We know that the Niagara Self Starter will hold up and make friends for the men who sell it.

That's why we do not hesitate to guarantee every single starter without any qualification.

The Niagara Self Starter mixes the right proportion of gas and air in the cylinders of the engine.

That's why it always starts the engine—that's why it does not foul the engine.

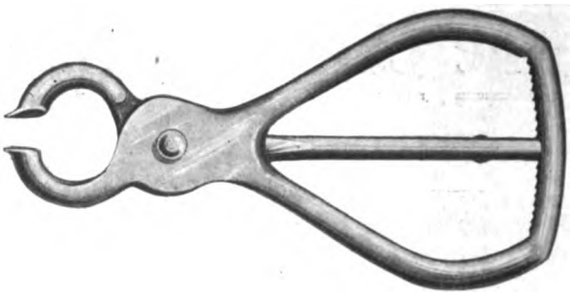
The compressor in the Niagara Self Starter is made of seamless drawn steel tubing with a cast iron piston and two cast iron piston rings—the Niagara Self Starter will never wear out.

We still have some good open territory in which good money can be made.

If you are the right dealer, write us.

NIAGARA SALES COMPANY, Buffalo, N. Y.

Self Starter



A Necessity for Every Tool Kit

No tool kit is complete unless it contains a set of Gilmer Tire Repair Pliers—the means whereby tire life can almost be doubled. And just incidentally the owners of tool kits are beginning to realize this very strongly, all of which makes it imperative that every live, wide-awake dealer should carry a sufficient stock of

GILMER TIRE REPAIR PLIERS

Gilmer Tire Repair Pliers prevent blow outs. They do this by enabling the car operator to repair properly the small cuts to which every tire is subject and stop them from becoming big cuts and blow-outs.

Hundreds of thousands of car owners have used and are using rubber gum. Every one of these persons will appreciate instantly, upon seeing them, that Gilmer Tire Repair Pliers are the only tools which make possible the proper use of rubber gum for tire repair.

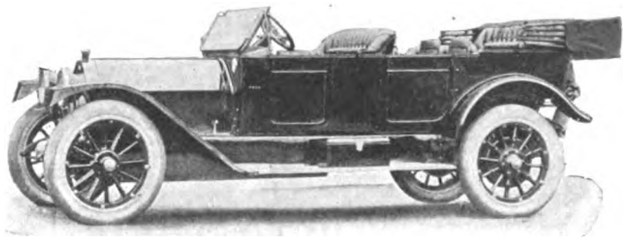
We are shipping all orders according to date of receipt. Get your order in so that you won't be disappointed.

G. WALKER GILMER, Jr.
50 North Seventh Street Philadelphia, Pa.

GILMER TIRE-REPAIR PLIERS
PATENTED TRADE MARK

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"The Car of Quality"



Kline Kar Model 6-60, Touring, $3500

DEALERS

YOUR experience with other cars should tell you that it does not pay to handle a line that constantly worries the life out of you with complaints from the user, who has trouble with the machine. This user knows now that he is better off when he buys a car of quality in the first place, even though he must pay a little more for it, and he will soon begin to demand such a car of his dealer.

It is up to you to have the car in your line when he calls. The Kline Kar will answer all the requirements this prospect may impose and more.

Prices $1850 to $3500
(Fully Equipped)

Get Our Proposition

Kline Motor Car Corporation
YORK, PA. RICHMOND, VA.

BENZ

Since the introduction of BENZ cars to the motoring public of America no car has attained such world-wide supremacy as to its construction, standing up quality, and material. The new type of 35 and 50 H. P. BENZ models are the last word in automobile construction.

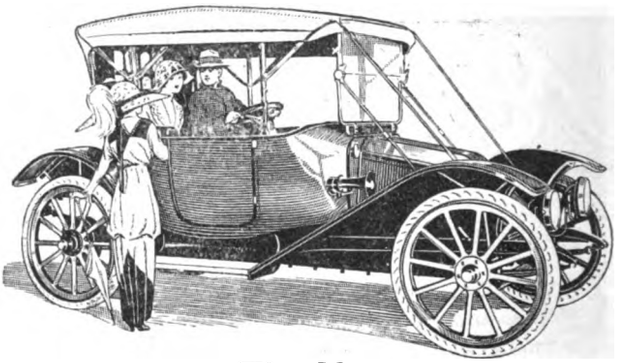
The noticeable features of this type of BENZ cars include the offset crank shaft, smokeless oiler, and SILENT CHAINS instead of timing gears.

The BENZ Carrosseries are noted for their beautiful lines and thorough comfort.

To those desiring AGENCY of this car the Benz Company will offer special terms. We want RELIABLE, ENERGETIC agents to further our interests for both BENZ pleasure cars and BENZ-GAGGENAU trucks, which today stand recognized by those who know, as the leading 6-ton truck. Wire or write us, no matter where you are.

Our PRICES compete with LEADING AMERICAN makes.

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250 West 54th Street New York, N. Y.
Direct Branch of Benz & Cie., Mannheim, Germany.



The New
Argo Electric
Roadster

Has Met with Instant Success

The Argo Roadster is a distinct departure from the old type of awkward, top-heavy electric. It has a long wheel base — low-hung construction — Interlocking foot control — non-reversible wheel steering apparatus—large artillery wheels—bevel gear drive and many other new improvements.

It has all the speed and all the mileage that you are ever likely to need — combined with the safety and convenience of an electric. Noiseless—clean—safe and economical to maintain.

Write For Our Catalog which gives complete description and specifications of the Argo Roadster, Brougham, etc.

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All Tire Manufacturers will only guarantee their product when filled with air at the recommended pressure.

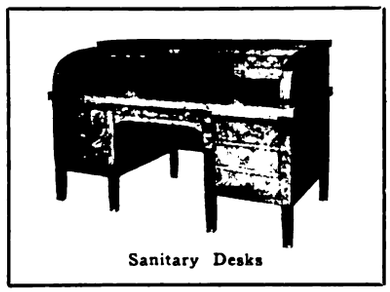
GET A 1912 TWITCHELL Positive Lock Stop AIR GAUGE

With it you can get more mileage out of the Tires, because you can always keep them at right pressure.

The Twitchell Gauge is Tire Insurance for a dollar—Order one from your dealer or from us direct.

THE TWITCHELL GAUGE CO.
1200 Michigan Ave. CHICAGO, ILL.





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Ford
THE UNIVERSAL CAR

Bread at a dollar a loaf is not more ridiculously extravagant than big-car travel at twenty cents a mile. One hundred and nine miles at a total cost of eighty-one cents is a recent but not unusual accomplishment of the Ford.

Every third car a Ford—and every Ford user a Ford "booster." New prices—runabout $525—touring car $600—delivery car $625—town car $800—with all equipment, f.o.b. Detroit. Get particulars from Ford Motor Company, Detroit, Mich.

American Made for American Trade

New Departure ball bearings are a guaranteed American product, the merit of which has been thoroughly established in the American market, to the advantage of American manufacturers.

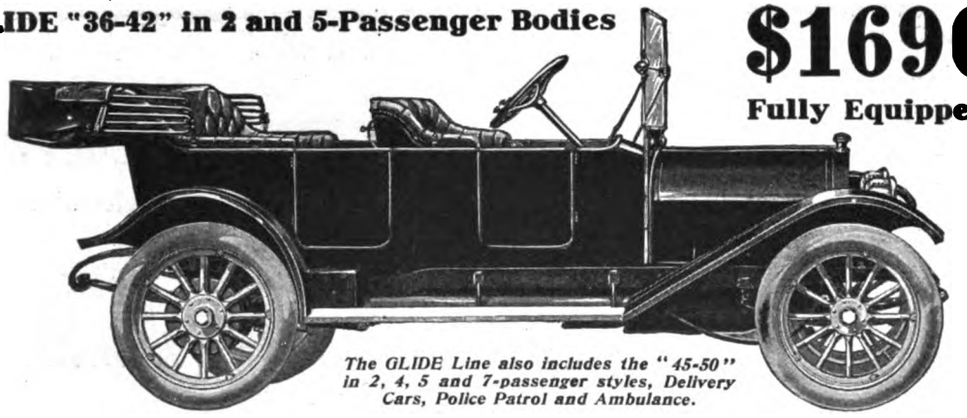
NEW DEPARTURE
Guaranteed
BALL BEARINGS

Send for catalog describing the three types:
Double row, taking loads from all directions.
Single row, standard, strong and superior.
"Radax," one row of balls taking radial and one-direction thrust.

THE NEW DEPARTURE MFG. COMPANY, Bristol, Conn.
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GLIDE "36-42" in 2 and 5-Passenger Bodies



The GLIDE Line also includes the "45-50" in 2, 4, 5 and 7-passenger styles, Delivery Cars, Police Patrol and Ambulance.

$1690
Fully Equipped

The *Popular* QUALITY Car

THE GLIDE "36-42" is strictly a QUALITY car—only the best known quality of materials has been used.

The GLIDE is a pleasure car—not a worry wagon. The great strength, simplicity and accessibility of all its working parts enable you to leave your worries behind.

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The new Motor-Driven Tire Pump saves your strength, your time, your temper. Also saves your tires by keeping them fully inflated.

The Electric Lighting System is another of the GLIDE'S high-class features. Simply touch a button.

Electric Bull's Eye Side Lamps are sunk in dash, adding to the GLIDE'S appearance, eliminating all rattling and minimizing chances for breakage.

The GLIDE Self-Starter is sure of a spark, regardless of whether the points of the magneto are together or not.

Center Control, Left Side Drive, Floating Rear Axle with Pressed Steel Housing, Baker Bolted-on Demountable Rims, Goodyear No-Rim-Cut Tires—are all found in the 1913 GLIDE "36-42."

The GLIDE Price

enables you to own a highest-class, top-quality car without paying enormous and unreasonable profits.

No other car gives you the up-to-date, efficient, luxurious GLIDE equipment, together with GLIDE structural quality and GLIDE service—at anywhere near the GLIDE price.

Write NOW for detailed descriptive circular.

Dealers

A GLIDE agency will be worth thousands of dollars to you. Open territory can be obtained NOW upon very attractive terms. Don't let this exceptional opportunity slip through your fingers. If you do, you'll regret it. Write us TODAY.

THE BARTHOLOMEW CO., 220 Glide Street, Peoria, Illinois

GLIDE "36-42" FEATURES

- Automatic Dynamo Lighting System
- Motor-Driven Tire Pump
- Unit Power Plant
- Long Stroke Motor with *Enclosed Valves*
- Center Control
- Left Side Drive
- Electric Side Lamps in Dash
- Electric Headlights and Tail Lamp
- An *Efficient* Self-Starter
- Floating Rear Axle with Pressed Steel Housing
- 118-inch Wheel Base
- Demountable Rims (Baker bolted-on)
- Goodyear No-Rim-Cut Tires

Glide

Demand Them on Your Car

Are you tired of tire expense? Buy tires that are guaranteed by the makers for **5,000 MILES**—tires that will take you from New York to San Francisco and half way back again.

AJAX TIRES

Guaranteed 5000 Miles **Guaranteed 5000 Miles**

The time to get the right tires is when you are buying a car. Give yourself a square deal, insist upon **AJAX**, and minimize the inconvenience attending blow-outs, rim-cuts, punctures and tire troubles.

WHY BE SATISFIED WITH 3,500 MILES TIRE SERVICE WHEN YOU CAN GET 5,000 MILES FOR THE SAME MONEY.

DEALERS—Write us with a view to handling the most attractive proposition in the tire field.

AJAX-GRIEB RUBBER CO.

General Offices: 1796 Broadway, New York City

Factories: Trenton, N. J. **Branches in Principal Cities**

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The WOODSTOCK

"You can walk from there to anywhere"

Our new addition is ready for occupancy.
We now have 360 rooms with 265 baths.
Write us for descriptive folder with typical floor plan and rate card.
Wire for reservation at our expense.

RATES

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Outside room with bath for one, per day..... 3.00
Outside room with bath, for two, per day..... 4.00
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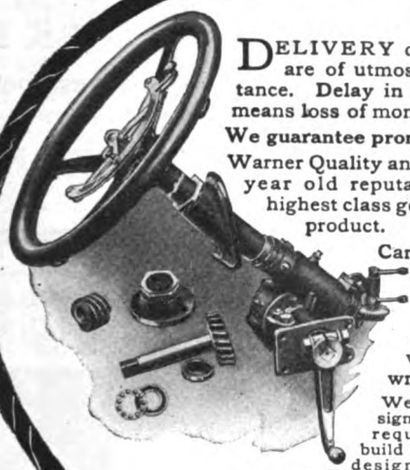
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DELIVERY dates are of utmost importance. Delay in shipments means loss of money.

We guarantee prompt deliveries.

Warner Quality and Warner eight-year old reputation for making highest class gears is back of the product.

Car makers interested in the Quality and Merit that means absolute safety and satisfaction will do well to write.

We modify our designs to meet detail requirements, or build to approved designs on seasons quantity specifications.

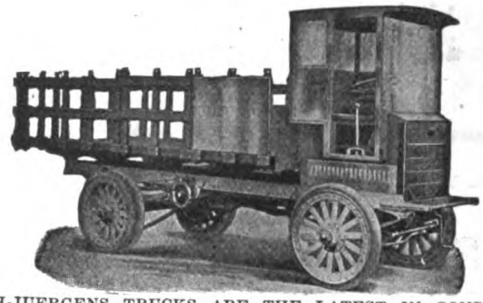
Philadelphia, Glenwood Av. and 2nd St.
Detroit, 628 Ford Building

Warner Gear Co.
Muncie - Indiana

Lauth-Juergens

Lauth-Juergens Trucks are Delivery Insurance

QUALITY DURABILITY
ONE, TWO AND THREE TON CAPACITY



LAUTH-JUERGENS TRUCKS ARE THE LATEST IN CONSTRUCtion, most powerful in operation and the motors are guaranteed against defective workmanship and material for the life of the truck. They are positively the highest class trucks made. Two cylinder, one-ton, four cylinder, one, two and three-ton. Four speeds forward, Hess-Bright ball bearing transmission made in our own shops of the finest tool steel, three-piece disc clutch, covered by patents owned by us. Send for 1912 Catalog and specifications. Prompt delivery on all models. Large publicity campaign just begun. Our quality will do the rest.

Reliable Agents: Secure Your Territory for 1912 at Once.

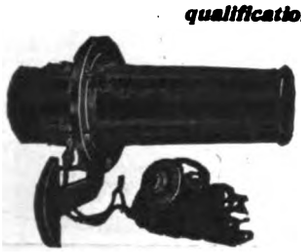
The Lauth-Juergens Motor Car Co., Fremont, Ohio.

Branches and Agencies

BOSTON—David Abrams, 131 Portland St.
NEW YORK—West Side Garage & Motor Co., 160-162 101st St.
CHICAGO—The Lauth-Juergens Motor Car Co., 2630-32 Wabash Ave.
NEWARK, N. J.—Merchants Motor Car Co., Essex Building.
DETROIT, MICH.—Bierl Auto Truck Sales Agency, 453 Dix Ave.
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Prices are the lowest for which horns of Dependable qualifications can be bought



Torpedo Type
Price $20

Automobile Supply Mfg. Co.
220 Tanfle Place, BROOKLYN, N. Y.

INTERLOCK INNER TIRES
Stop Tire Troubles

INVESTIGATE AND LEARN WHY SO MANY THOUSANDS OF MOTORISTS ARE DISCARDING INNER SHOES, RELINERS, FILLERS, AND OTHER MAKESHIFTS FOR INTERLOCK INNER TIRES—AND WHY INTERLOCKS ARE HANDLED AND RECOMMENDED BY THE BEST SUPPLY DEALERS AND TIRE HOUSES ALL OVER THE COUNTRY.

One weak point of the automobile to-day is that you can't depend on its tires. INTERLOCKS revolutionize this condition by making your tires so strong that blowouts become practically impossible. INTERLOCKS save half your tire expense—save repair bills—double your mileage—prevent punctures and completely free you from all fear of tire trouble.

What INTERLOCKS Are.—The INTERLOCK is a complete inner tire (not an inner shoe) which is placed between the outer casing and the inner tube to strengthen the outer casing and protect the tube. It is the only reinforcement which is locked by air pressure to the rim and which becomes an integral part of the tires, and, therefore, cannot heat or chafe. Even if the tire is broken the INTERLOCK will hold.

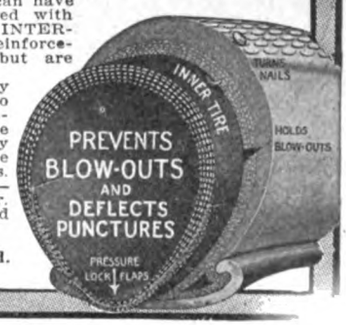
INTERLOCKS Insure Safety.—You know that the sudden blowing out of a tire may easily ditch any car when going at fair speed—the safety of INTERLOCKS should appeal to you.

Reduce Your Tire Expense.—You can have the tires on your new car equipped with INTERLOCKS if you specify them. INTERLOCKS are the only perfect tire reinforcement. They cost a little more but are cheapest in the long run.

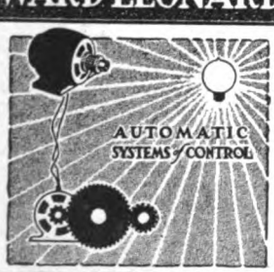
For your present car—ask any dealer or supply house, or write to us for the name of your nearest supply source. INTERLOCKS will make any fairly sound tire more than carry you through the season. They are easily placed and are made in all sizes.

We Want Dealers Everywhere.—Write for Special 30 Day Offer, Booklets, Prices, Records of Road Tests and Testimonials of users.

DOUBLE FABRIC TIRE CO.
600 W. 9th St. Auburn, Ind.



WARD LEONARD



Lighting - Starting

FAULTLESS SERVICE

OUR EXPERIENCE IS YOUR GUARANTEE

Ward Leonard Electric Co
BRONXVILLE, N.Y.

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If You Need Motor Lamps

You Need This Catalog

We want you to write for the Solar Catalog before you decide on your motor lamps, for this is the most complete line of lamps on the market. Solar Lamps have been preferred by most motorists for the past fourteen years because of their brilliancy, their style, their strength and their several exclusive advantages—their special short focus lead glass lens mirror reflectors—the patented double ray light projection (in the Solarclipse), giving two distinct fields of light, for city and country use—the new black finish, the only such finish that's proof against heat and moisture—and other features that other lamps lack.

To fail to see Solars before you buy is to fail to include in your consideration the very finest lamps in existence. Solars are made for oil, electricity, gas and in combination, for pleasure cars, motor trucks, carriages, motor boats and airships. Write for catalog now—while you think of it. (136)

Kenosha, Wis. BADGER BRASS MFG. CO. New York City

SOLAR LAMPS

The Reasons for Jencick Quality and Jencick Prices are worth knowing.

JENCICK MOTORS For Motor Trucks

from base to spark plug, have features that are "Different and Better."

JENCICK MOTOR CORPORATION
Port Chester, New York

Champion Spark Plugs

Special Designs for Every Type of Motor Made

CATALOG MAILED ON REQUEST

Champion Spark Plug Co.
TOLEDO, OHIO

THE ONE-MAN TOP



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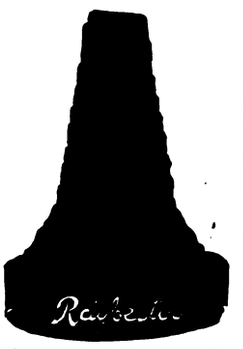
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436 Housatonic Ave. Bridgeport, Conn.
We also make Duplex and Raymond Brakes and Gyrex, the Mixer.





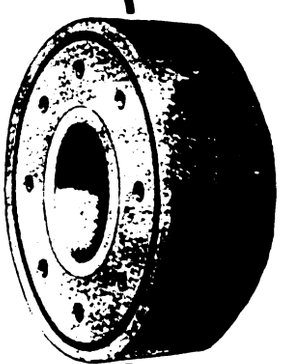
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Do you wish to make your car more comfortable by installing a pair of auxiliary seats? If so, have the best. Our seats are made in five styles. Send for catalogue.

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Hupmobile "32" Touring Car, Fully Equipped, $975 F.O.B. Detroit

Long-stroke motor, 3¼ x 5½ inches. Enclosed valves. Three bearing crank shaft. Unit power plant. Multiple Disc clutch. Three speeds forward. Sliding gears. Full floating axle. Center control. Zenith carburetor. Bosch magneto. 106-inch wheelbase. 32 x 3½ inch tires. Quick detachable rims. Mohair top with envelope. Jiffy curtains. Windshield. Rear shock absorber. Prest-O-Lite tank. Gas headlights. Oil side and tail lamps. Tools—horn. Trimmings, black and enamel. Standard color, black. Magneto and camshaft driven by silent Coventry chain.

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Chassis and specifications same as Touring Car. Large turtle back dust proof compartment for extra accessories, tires and baggage.

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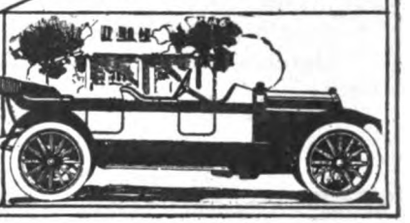
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THE TOURABOUT LINE

Four-40, Tourabout, 128-in. wheel base . . . $1450
Six-45, Tourabout, 136-in. wheel base $1750
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Complete specifications will be sent on request.



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Chicago Branch, 2437-39 Michigan Ave.
Southern Factory, Chattanooga, Tenn.

R-C-H "Twenty-Five" $900

The Car Complete F. O. B. Detroit

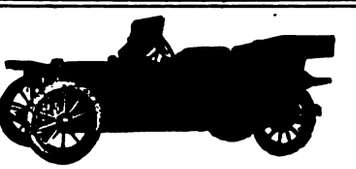
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THE CAR—The best materials, the highest-grade workmanship, and the most up-to-date ideas in construction

EQUIPMENT—The most complete, highest-grade equipment ever placed on a popular-priced car.

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Electrically Self-Started and Lighted — Inter-State — Six Models 40 and 50 H. P. Fully Equipped

Model 40—5 Passenger, Fore Door Touring Car.
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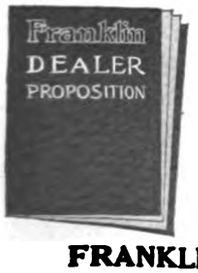
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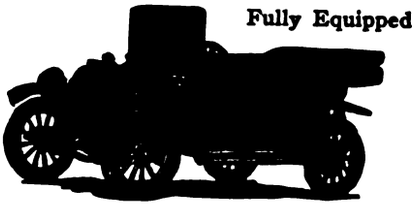
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25 H. P. Long Stroke Motor

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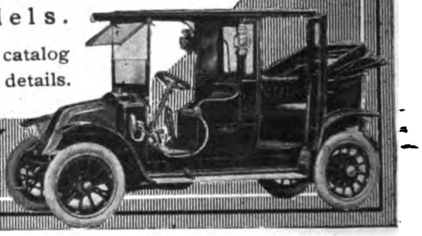
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The Mercer's great victory in the Vanderbilt Cup Race demonstrated conclusively that weight and bulk are no longer essential.

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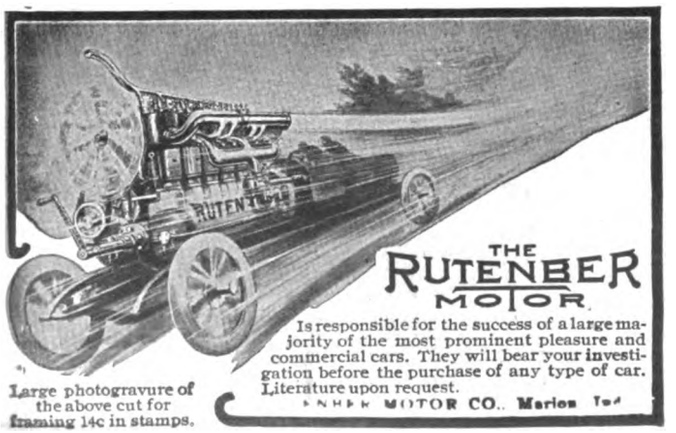
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We could build them cheaper But We Won't.

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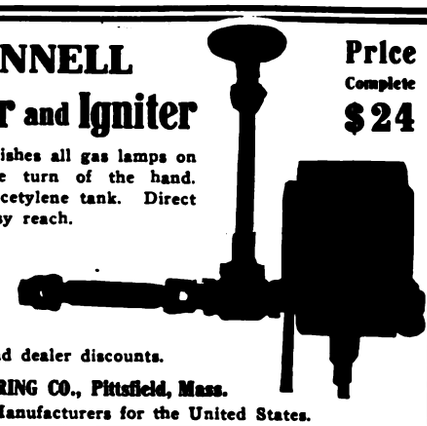
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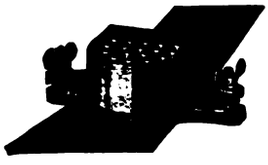
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You can repair CASINGS and INNER TUBES anywhere in 15 minutes, better than a Repair Shop can do—and for *one cent*.

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Price Complete, $4.00 Ready for Instant Use

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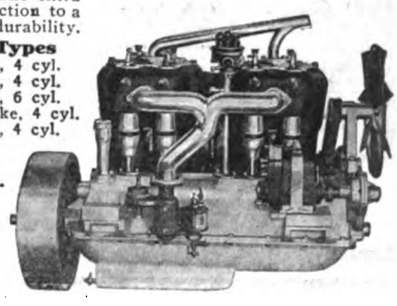
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fit any style or make of tires. The side rings are reversible, they curve outward on one side to fit a straight side tire, inward on the other to accommodate a clincher. Two turns of a nut unlocks the rim for demounting, two more turns locks the rim in place. Write for catalog 607, which explains fully.



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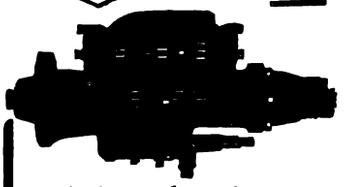
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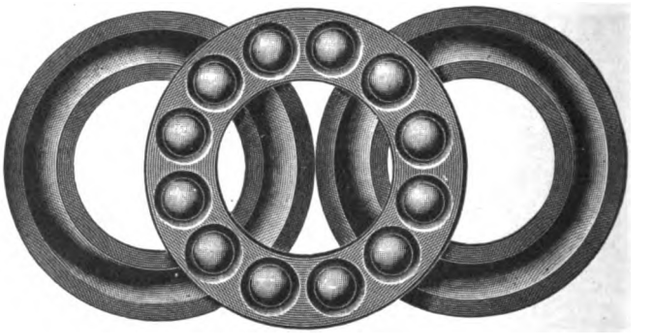
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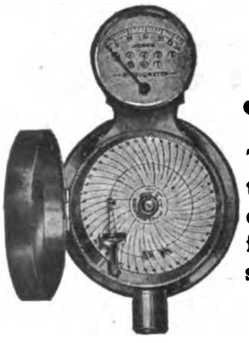
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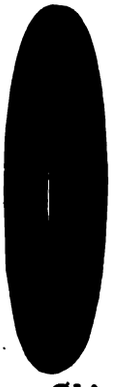
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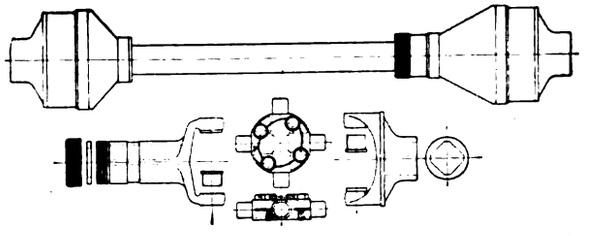


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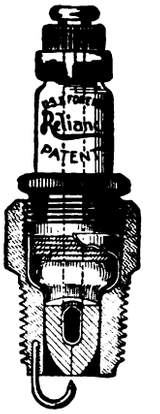
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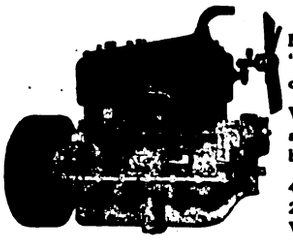
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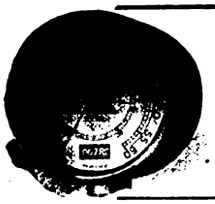
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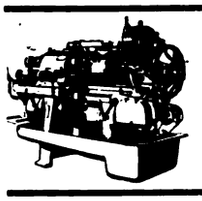


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Philadelphia Boston

Woodworth Treads
will help you to increase your business while benefiting your customers. We will send any responsible dealer a pair on 30 days' trial Write now. Good Agents wanted for unoccupied territory.
LEATHER TIRE GOODS CO., Niagara Falls, N. Y.



Magneto Plugs coax maximum power out of engine.
EMIL GROSSMAN COMPANY, Mfr., New York and Detroit



Schafer Ball Bearings
Famous for Their Durability
BARTHEL, DALY & MILLER
42 Broadway NEW YORK

The Ford Water Circulator
forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.
THE FULTON-McCUTCHAN CO.
1146 Michigan Ave. CHICAGO, ILL.

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Abbott-Detroit

"The demand of the day is that an organization shall be judged by its product and not by what it claims for itself" Keep this in mind when you examine these 1913 models

MODELS AND PRICES

30-40	Fore-door Roadster, 116-inch wheel base	$1700
34-40	5-passenger, Fore-Door Touring Car 116-inch wheel base	$1700
44-50	5-passenger, Fore-Door Demi-Tonneau 121-inch wheel base	$1975
44-50	7-passenger, Fore-Door Touring Car 121-inch wheel base	$2000
44-50	Battleship Roadster, 121-inch wheel base	$2150
44-50	7-passenger, Fore-Door Limousine 121-inch wheel base	$3050

Advance Catalog on Request

ABBOTT MOTOR CO.

807 WATERLOO STREET DETROIT, MICH.

"Built for Permanence" "Guaranteed for Life"

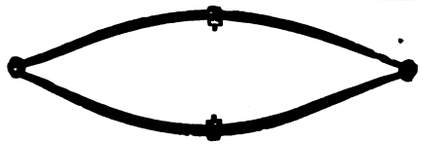
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Sheet Metal Stampings

Estimates Cheerfully Furnished

The Bossert Company
UTICA, N. Y.





GUARANTEED AUTOMOBILE SPRINGS

Our plant is devoted exclusively to the manufacture of high quality springs. All work is oil tempered and warranted. Our circulars contain valuable information. Write.

PENN SPRING WORKS
BALDWINSVILLE, N. Y.



These Tires for You

Four corps of experts working in four of the best equipped tire plants in the world are operating as a unit to produce.

UNITED STATES TIRES

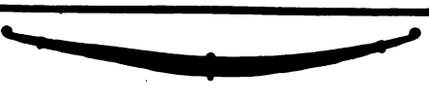
Nothing of the kind has ever before been attempted in automobile tire manufacturing.

United States Tire Company
New York

Look at our new middle name

PENNSYLVANIA Oilproof VACUUM CUP TIRES

PENNSYLVANIA RUBBER COMPANY
Branches: Coast to Coast. Jeannette, Pa.



Perfection Spring Company

SPECIALISTS IN

Spring Suspension

High Grade Only

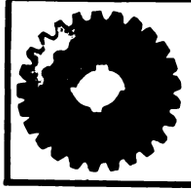
Cleveland, Ohio



GOODYEAR

AKRON, OHIO.

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)
The Goodyear Tire & Rubber Co., Akron, Ohio



GRANT-LEES GEARS

The Grant-Lees Machine Co.
Cleveland, Ohio



All Standard Bearings

are fully described in our

New Catalog 24A

Send for it.

STANDARD ROLLER BEARING CO., Philadelphia

POLSON Quality Windshields

Auxiliary Seats, Bumpers and Gas Starters

POLSON MANUFACTURING CO., Buffalo, N. Y.

$495.00 METZ 22 H. P. MOTOR CAR

The most economical car you can buy at any price. The Metz will run from 25 to 32 miles on a gallon of gasoline, over 100 miles on a pint of lubricating oil, and from 8,000 to 10,000 miles on a set of tires. You can secure exclusive sale of these cars in your territory. Book "B" mailed free on request.

METZ COMPANY, Waltham, Mass., U.S.A.

The Bush Radiator

THE BUSH MANUFACTURING CO.
HARTFORD, CONN.

A CAR THAT IS ALL CAR

No finicky frills—no false valuations—merely a compact, efficient, mechanical success—and incidentally one of the most beautiful cars ever built. Write today for advance Booklet A-15 Sturdy STUTZ Announcement, Series B.

IDEAL MOTOR CAR CO., Indianapolis, Ind.

Reo the Fifth

Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 38 horsepower four cylinder car of modern refinements priced at only $1,095.

(38) R. M. OWEN & CO., General Sales Agents
REO MOTOR CAR CO., Lansing, Mich.

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: In capitals, 25 cents per line

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

STEVENS AUTO TIRE VALVE. Adopted by RALPH DePALMA, Winner of the Vanderbilt Cup at Milwaukee, 1912. Can be attached instantly without expense to any inner tube stem on any car. Saves one-half the time and labor necessary to inflate tires by any other method. Easily adjusted. Warranted not to leak. 200,000 in use. Send $1.00 for set of four. Try them for 30 days and IF NOT satisfactory, money will be cheerfully refunded. STEVENS MANUFACTURING AND SUPPLY COMPANY, Dept. D, 1223-25-27 Wabash Ave., Chicago, U. S. A.

FOUR-CYL. en bloc motor, 20-24 H.P., $75; 2-cyl. opp., $20 to $35; 1-cyl., $15; 4 30 x 3½ Dunlop casings, $7 ea.; 1 30 x 3 cl. Goodyear and tube, $7; $35 Gabriel horn, $5; New Curtiss $5 exhaust whistles, $1; Shaler vulcanizers, $7; others, $1 to $3. B Presto tanks, $12; carbide tanks, new, $1.25; send 10c. and get new and old Standard wire and screw gauge and bargain list. O'BRIEN, 6608 State St., Chicago, Ill.

TO EXCHANGE—Aeroplane, complete, for auto or diamonds. O'BRIEN, 6608 State St., Chicago, Ill.

FORD spare demountable wheel, something new. No tire trouble on road. Write. ANGIER'S, Streator, Ill.

TRUCK DESIGNER, at present employed, would consider offer from truck or parts builder who has opening for high grade man. BOX 225, Motor World.

MUST sell Columbia five-passenger, 32-H.P., 4-cylinder touring car, fully equipped, in good condition; price, $600. ALEX. H. CHRISTMAN, 51 Brook Ave., Englewood, N. J.

STUCK deep in mud or sand? My new appliance will help you out. A Xmas present. E. I. SPENCER, 3201 E. Douglas Ave., Wichita, Kan.

BODIES.

Five passenger, fore door touring car bodies, new, painted blue or black, finest upholstering and cushions.....$52.50
Mohair tops with dust cover and side curtains to fit.....$18.50
AUTOPARTS MFG. CO.,
Detroit, Mich.

WANTED—Position as branch manager or high class salesman. For three and one-half years successfully held present position as branch manager of the largest branch of a western manufacturing company. Have more than made good. Am technically trained and have a valuable acquaintance among automobile manufacturers and engineers. Will leave my present position in December, and now invite correspondence with manufacturers who can use a high grade man, particularly well posted in the ignition, starting and lighting field. ENERGY, care Motor World, New York.

FOR SALE—Model T 1910 Ford 5 passenger touring car, fully equipped and in good condition, $350. FRANK O'HEARN, Melrose, Wis.

WANTED—A first-class man to take the agency for the latest invention on the market, a rubber cover for automobile handles called Steerease; write for full particulars. Address DEPARTMENT E, GOODYEAR RUBBER HOSE AND PACKING CO., 221 Chestnut St., Philadelphia, Pa.

WHEELS.

Set 34 x 3½ with Q. D. C. rims..... $10.00
Set 34 x 4 Demountable Wheels with extra rim 12.00
Set. 36 x 4 Demountable Wheels with extra rims 12.00
AUTOPARTS MFG. CO.,
Detroit, Mich.

NEW YORK Automobile Registrations, mailed daily, $1.25 per month. List, April to October, inc., $2.50. OWNERS AUTO LIST COMPANY, Albany, N. Y.

PEERLESS EXTRA FINE BLACK JAPAN

Covers solid one coat for enameling lamps, radiators and fenders. No undercoat required. Heat does not affect it. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

EXCLUSIVE AGENCIES are to be established throughout the United States for our well-known Motor Truck Grips. Wide awake representatives desired. Fill applications at once. FEDERAL CHAIN & MFG. CO., 376 Birnie Ave., Springfield, Mass.

FOR SALE—Palmer-Singer 6-60 motor and transmission complete, in good condition. DR. FRYER, Riverside, Wash.

DO you wish to better your position? If your character and ability will stand investigation we can place you in any occupation, anywhere. Enclose 50c. for registration with references. Fee returned if unsuccessful. Address DEPT. F, BLUE LIST EMPLOYMENT EXCH., 250 West 87th St., New York City.

MAGNETOS

Bosch DU-4 Magnetos, Type 5 or Duplex $25.00
Splitdorf Magnetos, with coils..... 20.00
These are standard goods and only have 100 left. Send your check before they are gone.
AUTOPARTS MFG. CO.,
Detroit, Mich.

ATTENTION—Have a few manufacturers' samples, gentlemen's black broadcloth fur lined overcoats, lined throughout with Australian mink, large genuine Persian lamb collars, sizes 36 to 48. Value $75, will sacrifice for $35 each. Also several ladies' handsome long fur coats, satin lined, worth $90, while they last, $35; and few large size fur robes, plush lined, $15 each. All guaranteed new. Examine before buying. Send express charges, will send on approval. Write or call. E. ROBERTS, Room 8, 160 West 119th St., New York.

PEERLESS LINING DYE

Dyes the cloth linings of tops and curtains a black, uniform color, covering up water stains and grease spots. Does not wash off. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

SALESMEN, one who is now visiting automobile trade or owners. Good money made on a very attractive proposition. STURDY MFG. CO., 2637 Michigan Ave., Chicago, Ill.

An ad. like this will cost you $2.25 for each insertion.

Mr. Dealer:

8,000 readers means people primarily interested, otherwise they would not be subscribers. Make them your customers or eager to secure your patronage by

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order.
— In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

AGENTS WANTED — To handle the $1000 G. J. G. "Junior," racy, classy and specially designed chaseabout with 104-inch wheelbase, with a real 26 H.P. motor, Bosch magneto, Dorian remountable rims with 32 x 3½ tires, at a price of $1,000, which is a money maker for the sales agent. Write for literature and discounts to G. J. G. MOTOR CAR COMPANY, White Plains, N. Y.

APPERSON, 1907, 40 H. P., four seats; makes 60 miles per hour; everything new; bargain for ready buyer. A. C. HEWITSON, 101 West 66th St., Room 4, New York City.

SCORED CYLINDERS repaired, $12. No enlargement of bore—no need for new pistons and rings. Send piston with cylinder. Absolutely reliable method. References, testimonials, and full details on request. WATERBURY WELDING CO., Waterbury, Conn.

PEERLESS EXTRA FINE BLACK BAKING JAPAN

Bakes either to a high gloss finish, eggshell gloss or dull finish on lamps, radiators and fenders. Will not crack, chip or peel. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

AUTOMOBILES—A. C. C. A. Prices Talk! Every make. Every model. Hundreds runabouts, racy roadsters, five-seven passenger touring cars. $50 up. Guaranteed five years. Shipped Freight Prepaid! Write today for the largest Illustrated Catalog published! THE AUTOMOBILE AND CYCLE COMPANY OF AMERICA, Dept. I-N, 1769-1787 Broadway, New York City.

FOR SALE—Four cylinder, 55 H.P. Foreign F. I. A. T., double chain drive, racytype roadster, nearly new, price $2,500. C. L. WHITING, 591 E. Main St., Rochester, N. Y.

MAILING LISTS—Automobile owners, dealers, garages, repair shops, commercial car owners, or any make of car. OWNERS AUTO LIST CO., Albany, N. Y.

FOR SALE—One 16-passenger Sight Seeing Car. Address J. C. BRICK, Put-In-Bay, Ohio.

AUTOMOBILE BODIES, pleasure and commercial. Foredoors for open-front cars. Write for prices. AUTO SPECIALTY MFG. CO., 326 E. Market St., Indianapolis, Ind.

AUTOMOBILE and Motorcycle Tours—350 trips over the best roads in every State. 56 large pages of maps and road directions. 25c. postpaid. MOTOR TOURS, 51 Chambers St., New York.

WANTED—To exchange my 160 acre improved farm, with crop, in northwestern Oklahoma, for five-passenger touring car. CARL GRAU, Taylor, Tex.

WANTED—Salesmen, live, reliable hustlers, to handle two well established auto accessories as a side line, U. S., Canada, Mexico. Address BOX 233, Burlington, Wis.

PEERLESS LEATHER TOP DRESSING

An oil preparation that softens the leather and pantasote. Makes old tops look like new. Ask your garage and supply dealer for it.
The Columbus Varnish Co., Columbus, O.

WANTED—Packard 18; state price, year built and number of miles run. P. O. BOX 161, Niantic, Conn.

AUTOMOBILE Cylinders reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

RADIATORS.

Ford T Radiator	$18.50
Ford N-R-S Radiator (with pump)	23.00
Buick 10 Radiator	26.50
Buick 16-17 Radiator	32.50
Buick 19 Radiator	27.50
Hupp Radiator	25.00

AUTOPARTS MFG. CO.,
Detroit, Mich.

NEW CHEESE CLOTH REMNANTS, best polishing material, sold by the pound. Saves 40% of store prices. Price 38c. per pound in 50-lb. and 100-lb. bales. Agents wanted everywhere. AMERICAN MILL ENDS CO., Detroit, Mich.

PEERLESS BACK AND CUSHION DRESSING

Softens the leather and will not crack, wash or rub off. Makes old leather look like new. Dries in twenty minutes. Ask your garage or supply dealer.
The Columbus Varnish Co., Columbus, O.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

CHAUFFEUR'S COMPLETE OUTFIT SACRIFICED—Consisting of elegant mink fur lined coat, Persian lamb collar, $35; pair of elegant bear robes, $15 each; raccoon cap, $5; pair of fur gloves, $4; pair or goggles, 50c.; 1 pair leather leggins, $3.50. Will sell separately or the lot, all new, never worn, original price, $225. C. CHASE, 118 East 28th St., New York.

WHITE STEAMER, seven-passenger, model M, straight line body, 40 H.P.; absolutely perfect; complete equipment; $700. H. SNYDER, 112 West 38th St., New York. Telephone 4060 Greeley.

FOR SALE—One 2-ton Garford truck, with body and top, nearly new, in first class condition. Change of business reason for selling. SPRINGFIELD CREAMERY, Springfield, Mass.

PEERLESS AUTO TOP DRESSING.

A waterproof dressing for leaking mohair and duck tops and curtains. Makes old and faded tops look like new. Ask your garage and supply dealer for it.
The Columbus Varnish Co., Columbus, O.

telling them what you have to sell or want to buy. We guarantee a circulation of 8,000, so the actual cost of having your announcement appear before this audience is less than one-fourth of a cent per reader (see the hands in the margin). Think this over.



An ad. like this will cost you 75c. for each insertion.

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HORN LEGAL?

driven by horse or human power, might be inadequate for automobiles.

"An adequate signal is one which will give a sufficient warning of danger. Three requisites at least must obtain before an automobile warning signal can be adequate:

1. It must be certain in operation. The ordinary rubber reed horn deteriorates when exposed to dampness.

2. It must be loud enough to be heard. The rubber reed horn does not always emit a sound loud enough to carry the necessary distance.

3. It must be easily operated. One using the ordinary rubber reed horn must take his hand off the steering wheel to blow his signal, losing time and taking an additional risk.

"I have not found any court decisions exactly covering this point, but in my opinion in every one of these requirements the ordinary rubber reed bulb-horn often does not measure up to the true standard."

OSBORNE I. YELLOTT, *General Counsel for the Automobile Club of Maryland*, Baltimore, Md.:

"I do not agree with you that there is no doubt that the hand-operated bulb-horn is today illegal in those States where the law requires that an adequate and suitable signal should be used on motor vehicles, but I do think that such laws leave entirely open the question of the adequacy of the bulb-horn, and that such question is to be determined by the Courts under the circumstances of each particular case.

"In other words, I do not think a motorist can safely rest by merely providing himself with a bulb-horn and relying upon the same for use as a signal under any and all circumstances.

". . . . I am clearly of the opinion that the word "adequate" as used as an adjective governing the word "signals" in motor vehicle laws, must be taken to mean that the signal must be sufficient to give reasonable notice of the approach of the motor vehicle under the circumstances of the particular case and that no motorist could safely rely, in the event of the adequacy of his signal being questioned, upon the fact that he had used the best bulb-horn obtainable. . . ."

ARTHUR J. HALLE, *Halle & Geismer, Attorneys*, Cleveland, O.:

". . . . Independent of statute or ordinance, a person operating an automobile, particularly over cross-walks, where it may endanger life or limb, must use a high degree of care to prevent injuring pedestrians; and some courts have said 'must adopt every known safeguard.'

"In the trial of such a case for damages, a court could very properly say to the motorist: 'You relied upon the ordinary bulb-horn to warn this pedestrian of your approach. It is common knowledge that the sound of such horns often does not reach the ears of pedestrians in time, and oft-times is not heard at all. You had knowledge of this, yet you took no other precaution. We hold that this is not the exercise of the high degree of care that the law requires under the circumstances' . . ."

SIDNEY S. GORHAM, *Miller, Gorham & Wales, Lawyers, Chairman of the Legislative Committee, Chicago Automobile Club*, Chicago, Ill.:

". . . . While I believe the supposed magistrate's opinion is correct in holding that the bulb-horn is not an adequate signal device and does not meet the requirements of the law in States where the use of adequate warning signals is required, I am inclined to believe, in view of the fact that the bulb-horn has for so long been recognized as at least a suitable warning signal for motor cars, that a conservative court would be slow to adopt the advanced position taken by the supposed magistrate in your advertisement.

"I do believe, however, that the bulb-horn will ultimately be held inadequate by the courts and that the writer of your supposed magistrate's opinion will one day come into his own as a prophet who will not be without honor even in his own country. . . ."

DAVE F. SMITH, *General Counsel for the Los Angeles Automobile Club*, Los Angeles, Cal.:

"From a legal standpoint I think the argument that the bulb-horn's use is illegal wherever the law demands an adequate signal, is sound, and will stand.

"A signal to be adequate must be sufficient at all times, not occasionally, or under certain circumstances, but under any and all circumstances except such as are termed Acts of Providence.

"The bulb-horn, therefore, is not adequate."


KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"


KLAXON

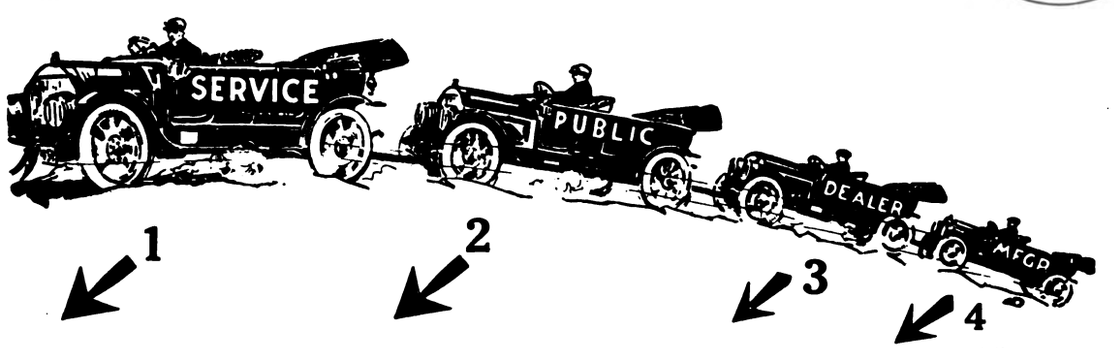
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BUDA — the Power that Pulls them All

Fog and sentimentality are being lifted from automobile selling. After much practical experience the public has learned that an automobile has *"innards." It is beginning to probe among the valves and gears and ask specific and "nosey" questions.* It has an almost impertinent hunger for *FACTS.* So the *wise* manufacturer and dealer are beginning to volunteer information—*absolute, precise* data.

But because the public has neither the time, opportunity or expert training to become conversant with manufacturing details there has arisen a demand for an impartial authority, a *commissioned proxy* to tell the buyer what he would know if he had the training and time to investigate. As to the engine, the real heart of a car, the dealer and manufacturer are learning that the *Recognized Authority,* respected by the BUYER, is the

BUDA MOTOR



1 Service at the Wheel

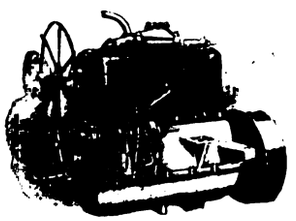
2 The public persuaded by demonstrated efficiency

3 Dealers pulled into line by public demand

4 Manufacturers follow the dealers' insistance

Yes—tell the buyer about the long stroke, the large and enclosed valves, etc., but if you want to convince more quickly and with more directness *SAY "BUDA." Corroborate, reaffirm* what you claim with the name *BUDA. The public comprehends BUDA instantaneously.* To The Public "Buda" means

—demonstrated efficiency in thousands of cars now in daily use.
—the selection of the most prominent and successful manufacturers.
—a Special Oiling Device.
—a superior "get-at ableness".
—the satisfaction of knowing that in case of accident, interchangeable parts can always be secured from a Company which is so well financed and which has been conducting a successful business for 25 years.
—and it *means the Pioneer in the "Cast-in-Block" method in the U. S.*
—and it means the following:



Buda Model "T"

1913 Specifications

Model "T" Motor, 4¼ x 5½ — Model "O" Motor, 4⅛ x 5½
Model "Q" Motor, 3¾ x 5½ — Model "M" Motor, 3¾ x 4½

Long Stroke, Enclosed Valves, Noiseless Timing Gears, Self-contained positive Oiling System. Extra large Valves and Bearings. Send in the coupon for a special Bulletin on the Motor suitable for your needs.

BRANDENBURG & COMPANY

1108 So. Michigan Ave. Chicago, Ill.
57th and Broadway New York, N. Y.
Ford Bldg. Detroit, Mich.

"I AM THE COUPON—CUT ME OFF HERE AND SEND ME ON MY WAY."

COUPON

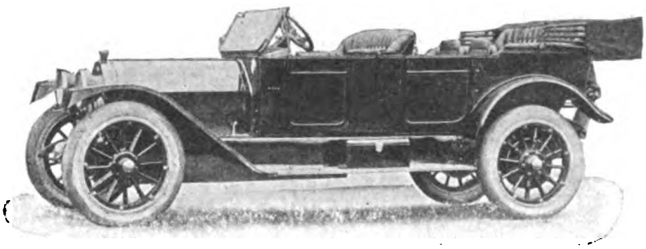
Brandenburg & Co.

Gentlemen:—
I am interested in learning more concerning the BUDA Motor for a ☐ Commercial or ☐ Pleasure Car.

Name.....
.....
Address.....
.....
I am interested because I am a
Mnfctr..... Dealer..... Owner.....

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"Service and Silence"



Kline Kar Model 6-60, Touring, $3500

DEALERS

YOUR experience with other cars should tell you that it does not pay to handle a line that constantly worries the life out of you with complaints from the user, who has trouble with the machine. This user knows now that he is better off when he buys a car of quality in the first place, even though he must pay a little more for it, and he will soon begin to demand such a car of his dealer.

It is up to you to have the car in your line when he calls. The Kline Kar will answer all the requirements this prospect may impose and more.

Prices $1850 to $3500
(Fully Equipped)

Get Our Proposition

Kline Motor Car Corporation
YORK, PA. **RICHMOND, VA.**

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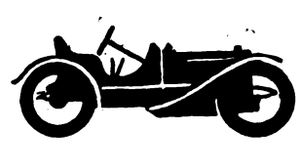
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No. 3

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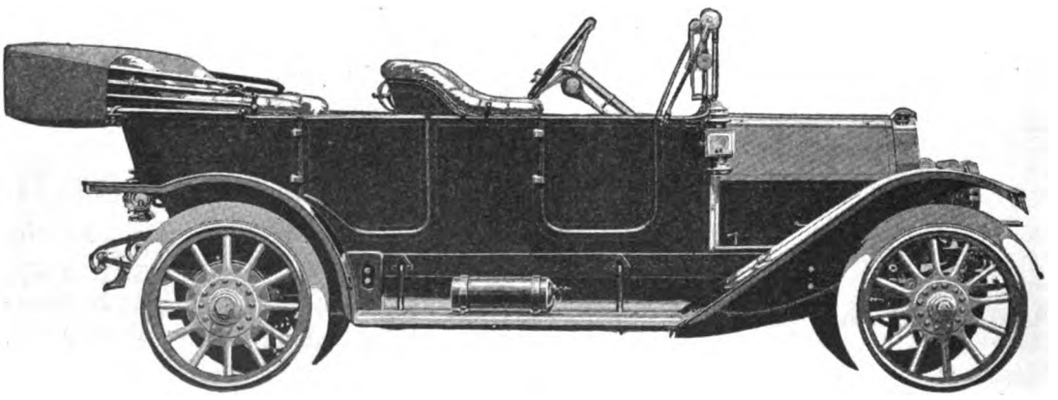
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In the Thermo-Syphon system, a circulation is set up ONLY WHEN THE CYLINDER WALLS HAVE BECOME HEATED.

Neither is there any pump to get out of order in this Overland system of cooling.

A 1913 catalogue on request. Please address Dept. 50.

The Willys-Overland Company
Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, November 14, 1912 No. 8

STUDEBAKER'S SURPRISE; LAUNCHES "SIX" AT $1550

New Model Accompanied by Sweeping Changes in Entire Line—Two New "Fours" and Three Closed Cars.

While popular priced "sixes" made, half-made and unmade, have been more or less widely heralded, one of them, full-born, has come from an unexpected place—none other than the Studebaker Corporation, of Detroit, Mich., which has kept its plans so closely to itself that comparatively few were aware that a "six" was in prospect.

In fact, the surprise is a double one, or, rather, a triple-barreled one, for not only is the new "six" an exceedingly attractive one which sells, completely equipped, even to an electric lighting and engine starting system, at $1,550, but two other new cars, both "fours," have been brought out as well, and all of them are radically different from the "20s" and "30s" that have borne the Studebaker nameplate in the past and which have remained substantially without change for the last three years. Marking a still further innovation in Studebaker products, the line now includes full-fledged limousine models in addition to the coupe that has been listed in the past. Furthermore, another new coupe and a Sedan have been added and all of the new models will be marketed in addition to the older Studebaker line. The prices of the older "20" and "30" models remain unchanged and are $800 and $1,190, respectively.

The two new four-cylinder models, styled "25" and "35," are priced $885 and $1,290, respectfully, and are exactly similar to the "six" except as regards a difference in size commensurate with their power. All have block cast motors of the most approved long-stroke type, the dimensions of the "25" and the "six" being 3½ x 5 inches, and of the "35" 4⅛ x 5 inches. Transmission elements include cone clutches and three-speed selectively operated gearsets mounted adjacent to the rear axle after the manner of previous Studebaker practice. Both the "35" and the "six" employ a new type of full-floating rear axle, the "25" having a new semi-floating axle, and the equipment of all is the same except that the smallest model is fitted with an acetylene gas primer-starter in place of the electric lighting and starting apparatus with which the two larger models are equipped.

Top, windshield, electric horn, demountable rims and the usual complement of tools, spare parts, etc., all are included in the equipment list. For the present, the "25" is supplied only in touring form, though the "35" and the "six" and supplied as coupe, Sedan and limousine as well. The "35" coupe and Sedan sell for $1,850 and $2,050, respectively, and the "six" limousine lists at $2,500.

Flanders Closes Deal with U. S. Motor.

Walter E. Flanders, of Detroit, will be the president and general manager of the reorganized United States Motor Co., of which the Flanders Motor Co., of Detroit, also will become a part. The negotiations to this end have been concluded, but the formal contract cannot be signed until the reorganization of the company actually is effected and the property comes into the reorganizers' possession, which probably will not come to pass before January next. Meanwhile, negotiations are in progress which probably will result in Flanders's retirement from active participation in the affairs of the Flanders Mfg. Co., of Pontiac, Mich., of which he is president and general manager, but which is not included in the United States Motor reorganization plan.

Whitesides Truck Factory Shuts Up.

Because of internal differences, the plant of the Whitesides Commercial Truck Co., of New Castle, Ind., has been ordered closed by the board of directors. Its future is problematical.

BRISCOE SAILS TO EUROPE; WILL BRING BACK NEW CAR

Former Head of U. S. Motor to Re-engage in Automobile Manufacture—"Watched" Before His Departure.

Benjamin Briscoe, former president of the United States Motor Co, sailed to Europe on Saturday last, 9th inst. He will be absent six or eight months, during which he will obtain sorely needed rest. Not all of his time, however, will be spent in seeking relaxation. For when he returns it is his intention almost immediately to re-engage in the manufacture of automobiles; and before he returns his plans, and even the car which he will produce, will be announced.

Two or three of his trusted engineering lieutenants will join Briscoe while he is abroad, and there they will not merely work out the design of the new car which is in mind but actually will fashion it; they will bring it with them to America. It is known that the car will be of the under $1,000 type. Just where it will be manufactured in this country it is, of course, too early to say; but that he will be able quickly to command the necessary facilities there is no doubt. Incidentally, Mr. Briscoe's brother, Frank Briscoe, head of the Briscoe Mfg. Co., of Detroit, already is in Europe, but whether he will become interested in the new enterprise the future will develop. It is stated, however, that Benjamin Briscoe's old partner, J. D. Maxwell, is not likely to be associated with him in the new project.

Before Briscoe sailed on Saturday last he received tangible evidence of the regard in which he is held by his old associates and most of the other workers in the United States Motor Co. It took the form of a testimonial banquet at the Hotel Astor, during the course of which the guest of the even-

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ing was presented with a magnificent Tiffany chiming stop watch and fob. It was the gift of the "men folk." The good will of the young women employes of the big company was attested by a large bank of chrysanthemums which graced the banquet hall.

Alfred Reeves, vice-president and general sales manager of the United States Motor Co., and Horace De Lisser, a former vice-president, were the chief speakers of the evening. Both are bound to Briscoe by more than ordinary ties of friendship, and their feeling was reflected in their remarks. Mr. Briscoe was genuinely affected but, among other things, he managed to say: "The greatest heritage, the greatest thing that a man can have, is friendship, and I believe, as I always said, I would rather stand here to-night as the recipient of your friendship and love than be possessed of all the treasures or wealth that could be laid before me."

Boli and the Joneses Go to Dallas.

L. A. Boli, who two years ago left the life insurance business in Dallas, Tex., to assist in organizing and exploiting the American Automobile Co., of New Albany, Ind., whose memorable "clink of gold" stock selling campaign ended in failure, has returned to Dallas and assumed the presidency of the Southwestern Motor Sales Co., which is capitalized at $500,000 under the laws of Arizona. C. Charles Jones and his brother, N. E. Jones, the Nebraskans around whose Jonz car the "clink of gold" campaign revolved, is one of its vice-presidents and N. E. Jones is its treasurer. Martin A. Seward is the other vice-president and W. L. Marsh secretary. The company is located at 1608 Commerce street, where it will represent the Lozier, Speedwell, Staver and Little cars and Speedwell and Staver trucks.

New Men Enter R. C. H. Corporation.

J. P. Hartz and C. P. Sieder, two of Detroit's well-known business men, entered the R. C. H. Corporation at its annual meeting on Thursday last, 7th inst.. when Hartz was elected treasurer and general manager and Sieder vice-president. R. C. Hupp remains president, L. G. Hupp secretary, and F. R. Bump assistant general manager. In addition to R. C. Hupp and Messrs. Hartz and Sieder, the directors chosen are G. W. Rogers and J. G. Robertson, of Akron, O.; C. G. McCutchen, of Jackson, Mich., and John Kelsey, F. M. Randall and J. H. Clark, of Detroit. In accordance with the arrangement outlined at a previous meeting, the active management of the R. C. H. Corporation was vested in an executive committee composed of Messrs. Hartz, Kelsey, Randall, McCutchen and Hupp.

OBSTACLES TO U. S. MOTOR REORGANIZATION REMOVED

Court Refuses to Permit Minority Stockholders to Intervene—Sale Probably in January—Tentative Plan Submitted.

Objectors to the pendant reorganization of the United States Motor Co. were practically bowled over by Judge Hough in the United States District Court in New York on Monday last, 11th inst., and the way thus was cleared for the sale of the property to the Wall street interests who controlled it and who are shaping the reorganization.

There were two separate objections, both, however, seeking the same end. They were filed, respectively, by the minority stockholders of the United States company and the minority stockholders of the Columbia Motor Car Co., each of whom sought permission to intervene in the suit which resulted in the appointment of receivers.

Judge Hough held that where one corporation has so managed or mismanaged the affairs of another corporation as to produce inability to pay obligations, and where a large part of the assets of the controlling corporation consist of stock in the managed corporation, the willingness of the directors of the latter to become parties to a suit against the controlling corporation binds the stockholders, even though the managed corporation may be solvent.

In his ruling on the application to intervene on the ground of lack of jurisdiction and insufficiency of the allegations contained in the bill of complaint, Judge Hough quoted the proceedings in the Metropolitan case. The action of the various defendant companies in answering the complaint brought by the Brown & Sharpe Manufacturing Co., of Rhode Island, practically constituted a waiver of jurisdiction, which bound the stockholders.

In the course of his remarks Judge Hough said that the creditors before beginning the insolvency action had gained an insight into the financial standing of the companies and had found it to be worse than they anticipated. He also said that the published reports showed paper assets of nearly double the amount of the liabilities. Judge Hough added, the shareholders might naturally be expected to refrain from taking any precautions in their own behalf, but by sitting still and doing nothing they could not claim that they had been wrongly dealt with.

A tentative decree of sale, submitted by W. E. S. Strong and Roberts Walker, the receivers, through their attorney, J. N. Rosenberg, provides that the properties of the United States Motor Co. shall be offered for sale in six parcels, as follows: No. 1—All the property of the motor company; No. 2—Property of the Alden-Sampson Mfg. Co.; No. 3—Property of the Brush Runabout Co.; No. 4—Property of the Columbia Motor Car Co.; No. 5—Property of the Dayton Motor Car Co., and No. 6—Property of the Maxwell-Briscoe Motor Co. Immediately after all these parcels have been offered for sale as a whole, all of the property constituting the six parcels shall be offered for sale together.

Should any bidder fail to make good his bid upon its acceptance by the court then the sums deposited by such bidder shall be retained by the receivers as and for liquidated damages, but not by way of penalty, it being adjudged that the damages so suffered by the receivers will be substantial, but incapable of exact ascertainment. Any bid for one or more parcels or for the property as an entirety may contain such terms in relation to the payment of the purchase price, and generally such other terms in relation to the payment of the purchase price, and generally such other terms as shall not be inconsistent.

At the close of arguments on the tentative decree of sale Judge Hough directed certain amendments of minor details to be made in the decree, and that it be presented for final action next Monday. Judge Hough said that he would set the sale for some time in January, and probably would name the date at next Monday's hearing.

Four M's Company Shortens its Title.

The Marshalltown Motor Material Mfg. Co., of the Iowa city of that name, has changed its corporate title to The V-Ray Co. The latter name is in keeping with the designation of the spark plug made by the company.

McIntyre Adds Popular-Priced "Six."

Following the trend of the times, the W. H. McIntyre Co., of Auburn, Ind., has added a "six" to its line. It is rated at 40 horsepower and lists at the remarkably low price of $1,485.

Californian Secures Kokomo Accounts.

F. Lenoir has opened up in Los Angeles, Cal., as the representative of the Byrne-Kingston Co. and the Kokomo Electric Co. His salesroom and service stations are located at 804 South Olive street.

Baudette Buys Pontiac Wheel Plant.

O. J. Baudette has purchased the plant of the embarrassed Pontiac Wheel Co., in the Michigan city of that name. It will be added to the body works of O. J. Baudette & Co.

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BANKERS OFFER $150,000 FOR THE WYCKOFF ASSETS

If Accepted, Business Will Be Continued and Creditors Receive About 25 per Cent.—Merger Plan not Abandoned.

After a long succession of false alarms, the affairs of Wyckoff, Church & Partridge, Inc., of New York, which company went into bankruptcy on March 14th, 1912, are in a fair way of clearing. The prospective adjustment is due to an offer of $150,000 for the assets of the corporation made to the receiver by H. B. Hollins & Co., New York bankers, whose name previously had been associated with the Wyckoff, Church & Partridge negotiations.

When information was sought, Hollins & Co. stated that they are acting in their "professional capacity" and therefore could say nothing, but it is known that they represent Howard C. Dickerson, George A. Ellis and Chester Griswold, who, in turn, are representing other men who at the same time do not desire that their identities be disclosed. It is understood, however, that they are not at present identified with the automobile industry. Messrs. Dickerson and Ellis are lawyers and Griswold is treasurer of the Motors Engineering Co., and was at one time affiliated with the Wyckoff, Church & Partridge entourage.

The Hollis offer applies to all of the Wyckoff, Church & Partridge assets, excepting the cash on hand, which it is understood amounts to approximatealy $50,000, and any claims or rights of action that Wyckoff, Church & Partridge may have against the Driggs-Seabury Ordnance Co., of Sharon, Pa. The property sought includes two leaseholds in New York City and the factory at Kingston, N. Y., in which the Guy Vaughn cars and American Commer trucks were being produced.

As a condition of the purchase H. B. Hollins & Co. agree to release the receiver from all claims of the bondholders to the amount of $200,000 of Wyckoff, Church & Partridge, Inc., on any property of the firm except the property securing the mortgage and bonds, and will give a release from the claims against the property made by Griswold & Webb.

The Hollins offer will be considered at a meeting to be held on November 22nd at the office of Nathaniel A. Prentiss, referee in bankruptcy.

According to the receiver, John S. Shepard, the Hollins offer, if accepted, will render available for distribution to creditors the sum of $189,304, which will permit of a dividend of between 25 and 27 per cent. to those creditors whose claims are unsecured.

Several months since, as was stated in Motor World at the time, efforts were making to bring about a merger of the Hudson Motor Car Co., of Detroit, the Fiat Automobile Co., of Poughkeepsie, and several other manufacturers, in the shaping of which H. B. Hollins & Co. were known to have a hand. When asked yesterday whether their present offer had any bearing on that project, Walter Kutzleb, of the Hollins firm, made light of the suggestion but admitted that the merger plans had not been wholly abandoned.

Buffalo Supply House in Trouble.

As a means of relieving its financial stringency, the Frey Auto Supply Co., of Buffalo, N. Y., on Monday last, 11th inst., filed a voluntary petition in bankruptcy in the United States Circuit Court in that city. Judge Hazel at once appointed as receiver George P. Urban, secretary and treasurer of the George Urban Milling Co. His bond was fixed at $5,000. The liabilities of the company, of which Charles L. Kelsey is president, are $18,500.87, and its nominal assets $22,344.55, but in applying for the appointment of a receiver the company frankly admitted that it probably can realize only about $6,000 of the $10,000 accounts receivable, and that its stock on hand, valued at $22,000, would not bring anything approximating that sum at forced sale. The largest creditor is George P. Urban, whose claim, amounting to $1,350, is secured by an equity assignment. The other large creditors are the Empire Sales Co. and the Diamond Rubber Co. Previous to the institution of these proceedings several actions had been filed against the Frey company by creditors.

Fire Damages Kelsey Wheel Factory.

Fire on Saturday afternoon last, 9th inst., damaged the turning and finishing departments of the Kelsey Wheel Co.'s plant in Detroit to the extent of about $5,000; the entire loss is covered by insurance. The damage, however, will cause no interference or delay in the Kelsey operations, as in laying out the plant each department was equipped in duplicate to meet just such an emergency as has arisen.

St. Louis Partners Disagree and Sue.

Claiming that their business was closed up recently following the burning of their place of business at 5033 Delmar boulevard, St. Louis, John H. Phillips has brought two suits in the Circuit Court against his partner, George F. Kirsch, demanding a financial settlement. The concern was capitalized at $2,000, each man owning half the stock.

ADAMS'S PATENT ON TIRE TREAD IS DECLARED VALID

In Face of Unusual Language, Court of Appeals Reverses Lower Tribunal—Holds Midgley Tread is an Infringement.

When, in July of last year, Judge Platt, in the United States District Court in Hartford, Conn., decided that "it would be absurd as well as highly inequitable" to bring to bear on heavy automobile tires an invention, such as that covered by the Calvin T. Adams patent, No. 609,320, conceived only with light bicycles in mind, his conception of absurdity and equity was sadly at fault. In more polished diction, this inference is contained in the decision of the United States Court of Appeals for the Second District, handed down on Monday last, 11th inst., which sweepingly reverses Judge Platt's ruling in the suit of the Metallic Rubber Tire Co. against the Hartford Rubber Works Co., in which the Adams patent was at stake.

The complainants, to whom the patent had been assigned, alleged that the Hartford Midgley wire tire tread infringed the Adams patent, but after only one week's deliberation Judge Platt declared the patent invalid and dismissed the charge of infringement. The Metallic Rubber Tire Co. at once appealed, and the Court of Appeals in its decision, written by Judge Noyes, not only reverses Judge Platt and sustains the Adams patent, which was issued August 16, 1898, but sharply criticises the Hartford Rubber Works Co., which at one time possessed a license under the patent, for, upon the expiration of its license, "putting out a product which even if not infringing, closely simulates the patent structure."

The language of Judge Noyes in sustaining the patent is as follows:

The invention of the patent—according to the specification—relates "to means for preventing the yielding tires of bicycles and other wheeled vehicles from slipping on the roadway, as they are particularly apt to do when the roadway is smooth and wet."

The patentee accomplishes his purpose by imbedding "in the material of which the yielding tread of the tire is composed, a peripheral succession of hard bearings, such as metallc wire, interwoven with the rubber or yielding material of the tread, so as to lie partly on the surface of the tread, the exposed portion of the wire being substantially flush with the surface of the tread, so as to bear upon the roadway and prevent the tire from slipping thereon, and yet readily yielding with the tire to allow the rubber or flexible material of the tread to act as a cushion in the usual way."

The patentee, then, after illustrating a method of making a tire according to his alleged invention, points out that when the wire stitches upon the surface are worn off "the exposed ends of the wire will act in the same way as hard bearings to prevent the wheel from slipping."

The patent contains but one claim which is as follows:

"The combination, with a cushioned vehicle-tire, of

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a tread applied to the entire periphery of the tire, and having metallic wire interwoven with itself, parts of said interwoven wire lying substantially flush with the outer surface of the tread, and forming cushioned antislip bearings covering the sides and bottom of the tread."

The defenses are (1) invalidity; (2) non-infringement; (3) abandonment by manner of prosecuting application; (4) want of equity.

Concededly the nearest approach to the patent in question is the Phillips English patent, and the question of anticipation may well be determined by examining that patent and comparing it with the one in suit.

The principal object of the Phillips patent was to protect and strengthen pneumatic tires. It illustrates numerous ways for stiffening and protecting tires and, among others, points out that the tread or wearing portion may be re-inforced and strengthened by stitching the rubber with metal wire, threads, cord and the like. Some of the drawings of the patent are very similar to those of the patent in suit. The prevention of slipping, however, is not stated to be either an object of the Phillips patent nor a result of the use of its structure. Moreover it is not clear that the non-skidding effect would be obtained by following the teachings and drawings of the Phillips patent. Wire sewed into a tire to reinforce the rubber would naturally be flexible wire while only stiff wire would furnish the "hard bearings" required to prevent slipping, especially after the wearing off of the loops. The Phillips patent shows that rubber tires may be stiffened and protected by wire stitching but, in our opinion, does not teach that exposed wire stitchings will make hard bearings to prevent skidding. Indeed many things in the Phillips patent point in the direction of covering the wires and it is never essential that the stitches should be flush with the surface of the tread.

For these reasons we think that the Phillips patent does not anticipate and is insufficient to negative invention. There being nothing else in the prior art nearly as close, it is unnecessary to further examine the art and the patent is held to be valid. This result is quite equitable for the objection of invalidity comes with rather ill grace from a defendant which has had a license under a patent and which, upon the expiration of the license, has put out a product which, even if not infringing, closely simulates the patented structure.

In our opinion the defendant's structure infringes. The patent requires alternate imbedded and surface loops and we fail to see that it is material whether the result be obtained by crinkled or coiled wires. Furthermore we find nothing in the patent requiring that it should be so narrowly construed as to include only wires stitched or woven into the tire. We perceive no reason why the word "interwoven" in the claim should not be held to be the equivalent of the word "embed" in the specification. Stitching or weaving is not an essential part of the invention. The claim covers the combination of the wire and rubber as a result and we think that the defendant should not be permitted to escape the charge of infringement by combining its wire and rubber in a different way from the stitching or weaving illustrated in the specification.

We find nothing in the proceedings in the Patent Office to estop the complainant from enforcing the patent and no want of equity in its cause.

The decree of the District Court is reversed with costs and the cause remanded with instructions to enter a decree for the complainant for an injunction, an accounting and costs.

Ball Company to Produce Car Heater.

The Atlas Ball Co., of Philadelphia, of which Thomas J. Heller, well known to the automobile trade, is vice-president, has acquired from the Al-Ton Motor Accessory Co., of Akron, O., the sole right to manufacture the Al-Ton motor car heater. The device is of the sort which utilizes heat from the exhaust of the engine and, according to Heller, arrangements are being made to produce them in very large quantities.

GRABOWSKY IS FINALLY FORCED INTO BANKRUPTCY

Creditors' Committee Throws Up Hands and Detroit Creditors Have Receiver Appointed—Liabilities Exceed $350,000.

After having encountered financial obstacles last winter, and despite the labors of a committee of creditors which was constituted a voting trust, and which then took over the management of the business in an effort to save it, the Grabowsky Power Wagon Co., of Detroit, finally has been petitioned into bankruptcy.

The petition was filed in the Federal court in Detroit by the Gillispie Auto Sales Co., the Delameter Hardware Co. and the Ditzler Color Co., and on Thursday last, 7th inst., Judge Tuttle named the Security Trust Co., of Detroit, as receiver.

The petitioners alleged that while insolvent the company made preferential payments to the Firestone Tire & Rubber Co. and other unnamed creditors. They also alleged that 15 or more suits were pending against the Grabowsky company, including the action instituted September 17th by John C. Kimble, a stockholder, who applied for an injunction to restrain the creditors' committee from what he styled the contemplated sale of the assets at a sacrifice.

Apparently, however, matters were brought to a climax by a letter issued by the creditors' committee, in which the latter practically threw up its hands and admitted that the recovery of the company was impossible. The committee stated that the plant no longer could be operated at a profit and that, as all orders had been completed, the factory had been closed down save for the employment of a few men to fill calls for repair parts.

The liabilities of the company are said to exceed $365,000.

Court Rules Against Surety Company.

Holding that a surety company, which furnishes an undertaking to one of the parties in a lawsuit, must make good a judgment even though it be taken by consent or default, the First Department of the Appellate Division of the Supreme Court, located in New York City, this week ruled that the United States Fidelity and Guaranty Co. must pay the E. R. Thomas Motor Branch Co., of New York City, the sum of $3,264.17. In the Supreme Court the case was decided against the Thomas company. As previously told in Motor World, the action grew out of an agency contract between the Thomas branch and the S & V Motor Co. of Brooklyn, and in a suit brought against the S & V, after considerable maneuvering, judgment in favor of the Thomas branch was given by consent. When the S & V failed to pay, suit was brought against the surety company.

Prest-O-Lite Argues Two Cases.

Arguments were heard last week in the United States Circuit Court of Appeals in Chicago in the case of the Prest-O-Lite Co. against the Searchlight Co., the former seeking to overthrow the decision of Judge Kohlsaat of the District court, who recently ruled that the Prest-O-Lite patent No. 664,383 was dead, despite numerous judicial decisions to the contrary. The lower court's decision was made on an application for a preliminary injunction.

Another Prest-O-Lite case was argued this week in the Federal court in Cincinnati, where an injunction was asked restraining Coughlin & Davis from infringing the Prest-O-Lite patents. In this case the attorneys for the defense made much of Judge Kohlsaat's decision and asked that the bill of complaint be dismissed. There also was a similar action brought by the Commercial Acetylene Co. against Coughlin & Davis.

More Knights Coming from Indianapolis.

Having come into full control of the former Atlas Engine Works in Indianapolis, the Lyons-Atlas Engine Works is preparing to diversify the plant's production of Knight engines. It now is turning out a 4½ x 5 four-cylinder motor, but shortly will produce a "six" of the same dimensions and later smaller "fours" and "sixes."

Three More Added to M. C. A. Roll.

At a meeting of the directors, held in New York on Thursday last, 7th inst., three more applicants were elected to membership in the Motor and Accessory Manufacturers, Inc. They are the John W. Blackledge Mfg. Co., of Chicago; James L. Gibney Rubber Co., of Philadelphia, and Westinghouse Electric & Mfg. Co., of Pittsburgh.

Tire Company Enlarging Branch System.

The United States Tire Co. recently has opened sub-branches in Newark, N. J., Birmingham, Ala., Rochester, N. Y., Washington, D. C., and Milwaukee, Wis. In the near future sub-branches also will be established in Providence, R. I., Worcester, Mass., Baltimore, Md., and Syracuse, N. Y., and Columbus and Toledo, O.

"Air-free, care-free, swear-free" is the euphonious and unusually catching manner in which a Cincinnati dealer is exploiting the Dayton airless tire.

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The Week's Incorporations

Norfolk, Va.—Allen Motor Co., under Virginia laws, with $2,000 capital; to deal in motor cars. Corporators—E. I. Allen and others.

Chicago, Ill.—Michigan Avenue Garage Co., under Illinois laws, with $5,000 capital; to operate a garage. Corporators—Edward Richter, James D. Donnell, A. J. Moran.

Warsaw, Ind.—Warsaw Auto Co., under Indiana laws, with $4,000 capital; to deal in motor cars. Corporators—Walter H. Stanley, John E. Armstrong, Allen S. Widanan.

Corporators—A. Walther, L. Worfel, E. Vandenberge, Anton Rein.

North Tonawanda, N. Y.—Twin City Auto Co., Inc., under New York laws, with $5,000 capital; to deal in motor cars. Corporators—Walter A. Arenz, Raymond Le Roy, Frank J. Wallenberg.

Chicago, Ill.—L. & M. Co-operative Tire Association, under Illinois alws, with $10,000 capital; to deal in motor car tires. Corporators—J. R. Williams, J. H. Richards, H. J. Richards, T. J. Salliman.

leum. Corporators—David O. Porter, W. B. Morrison, F. P. Springstead.

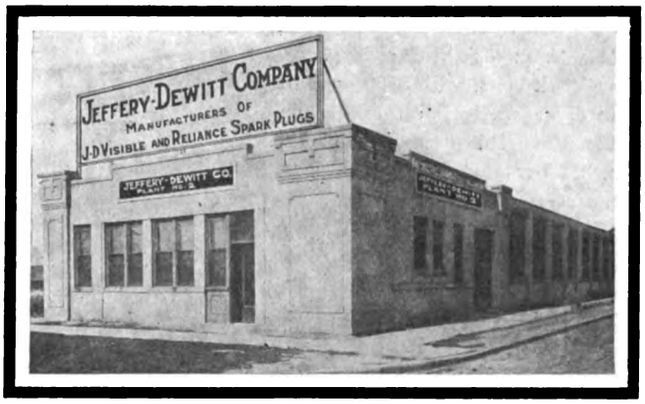
Brooklyn, N. Y.—Carlton Garage, Inc., under New York laws, with $5,000 capital; to operate a garage. Corporators—Joseph F. Cox, Marie J. Cox, 202 Prospect place; Philip H. Fett, 593 Carlton avenue.

Indianapolis, Ind.—Ham-Meix Mfg. Co., under Indiana laws, with $150,000 capital; to manufacture motor starters. Corporators—Harry W. Hamilton, Ben. F. Meixwell, Samuel B. Sutphin, Harold Taylor.

TWO NEW ADDITIONS TO DETROIT'S ALREADY IMMENSE AUTOMOBILE MANUFACTURING INDUSTRIES



WHERE DISCO STARTERS ARE MADE



PLANT NO. 2 OF JEFFERY-DEWITT CO.

St. Louis, Mo.—Maxwell Motor Sales Co., under Missouri laws, with $5,000 capital; to deal in motor cars. Corporators—Joseph Fillo, B. R. Ford, Charles B. Darrow.

Hartford, Conn.—Auto Owners' Supply Co., under Connecticut laws, with $5,000 capital; to deal in motor car supplies. Corporators—G. Herbert Peck, I. G. Cranton, R. S. Kilbourne.

Indianapolis, Ind.—Hunter-Hammond Auto Co., under Indiana laws, with $12,000 capital; to deal in motor cars. Corporators—F. Ellis Hunter, Harry L. Hammond, John B. Berryhill.

Dodge Center, Minn.—Dodge Center Improvement Co., under Minnesota laws, with $25,000 capital; to deal in motor cars, etc. Corporators—D. T. Rounseville, C. M. Cooper, E. E. Abbott.

Grand Rapids, Mich.—Page Auto-Hoist Co., under Michigan laws, with $50,000 capital; to manufacture motor car devices.

Portland, Me.—Maine Power Truck Co., under Maine laws, with $10,000 capital; to manufacture motor trucks. Corporators—Irving L. Peabody, Harry E. Nixon, Geo. E. Peabody, John W. Thomas.

Newark, N. Y.—Lippard-Stewart Sales Co., under New Jersey laws, with $50,000 capital; to deal in motor vehicles. Corporators—Benjamin P. Burton, Benjamin B. Burton, Robert C. Bennett.

Mount Vernon, N. Y.—Mount Vernon Local Auto Express Co., under New York laws, with $1,500 capital; to operate a motor express. Corporators—Lucy Jacobsen, Elizabeth Jacobsen, Fred Cardillo.

Los Angeles, Cal.—Broadway Auto & Equipment Co., under California laws, with $20,000 capital; to deal in motor cars and equipment. Corporators—F. A. Lechleider, H. V. Vultree, M. C. Lechleider.

Indianapolis, Ind.—Petroleum Development Syndicate, under Indiana laws, with $100,000 capital; to refine and deal in petro-

Norfolk, Va.—Auto Lighting Corporation of America, under Virginia laws, with $1,500,000 capital; to manufacture motor car devices. Corporators—A. D. Newcomb, Wailes Hank, W. J. Simpson.

Salt Lake City, Utah — Automobile Speedway, Co., under Utah laws, with $100,000 capital; to operate a motor speedway. Corporators—D. C. McEntyre, O. H. Hewlett, Fred Stuaffer, D. W. Adamson.

New York, N. Y.—Distributing & Importing Co., under New York laws, with $100,000 capital; to deal in motor cars. Corporators—Paul La Criox, Harvey T. Andrews, Henry A. Miller, all of 2 Rector street.

St. Louis, Mo.—Auto Products Co. of America, under Missouri laws, with $25,000 capital; to manufacture motor car parts and accessories. Corporators—Warren W. Smoot, A. E. Smoot, Eugene B. Stinde.

Cleveland, Ohio—Ideal Tool & Specialty Co., under Ohio laws, with $15,000 capital; to manufacture motor car accessories, etc.

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Corporators—J. C. McLeland, G. H. Penty, George K. Moulton, J. A. Hecker, Clifford Fuller.

Detroit, Mich.—Detroit Puncturine Co., under Michigan laws, with $1,000 capital; to manufacture tire filler. Corporators—M. H. Chamlain, Jr., Louis W. Taylor, R. R. Montgomery.

Chicago, Ill.—Auto Combination Lock Co., under Illinois laws, with $50,000 capital; to manufacture motor car devices. Corporators—Howard L. Masson, Harry M. Snow, Francis W. Robinson, William J. Liddy.

Columbus, Ohio—Columbus Auto Parts Co., under Ohio laws, with $25,000 capital; to manufacture motor car parts. Corporators—Reynold E. Klages, Charles H. Krag, C. Krag Klages, John J. Stoddard, Walter D. McKinney.

New York, N. Y.—Atlas Tire Co., under New York laws, with $10,000 capital; to deal in motor car tires. Corporators—Ralph W. Morrison, 181 West 73d street; R. D. Placak, 318 West 53d street; F. F. Nichols, 135 Broadway.

New York, N. Y.—Light Car Corporation, under New York laws, with $500 capital; to deal in motor cars. Corporators—Julius F. Myers, 581 West 161st street; Oliver R. McMahon, 852 Broadway; W. P. Myers, 56 West 11th street.

New York, N. Y.—Bryant Auto Painting Co., under New York laws, with $2,000 capital; to paint motor cars. Corporators—Adolph Berkowitz, 218 East 6th street; Benjamin Davis, 181 East 104th street; Paul Ostruk, 1296 Avenue A.

St. Louis, Mo.—St. Louis Motor Transportation Co., under Missouri laws, with $25,000 capital; to operate a motor delivery. Corporators—William R. Bush, Frank J. Bush, Knox Taussig, William A. Thomas, Richard S. Locke.

Brooklyn, N. Y.—King's County Automobile Association, Inc., under New York laws, with $2,000 capital; to deal in motor car accessories. Corporators—Murray H. Himowich, 82 6th avenue; Alfred Lenick, 619 West 127th street; Louis S. Harris, 1061 Trinity avenue.

Recent Losses by Fire.

Detroit, Mich.—Kelsey Wheel Co., plant damaged. Loss, $5,000.

Lebanon, Pa.—Hurshberger & Aturnes, garage and 25 cars destroyed. Loss, $25,000.

Hightstown, N. J.—Perrine & Wilson, Mercer street, garage destroyed. Loss, $2,500.

Chicago, Ill.—Schacht Motor Co., 1507 South Michigan avenue, building and 30 cars destroyed. Loss, $35,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve To Place Many Workers In New Places—Few Leave the Industry.

F. W. Robartes has been appointed manager of the Washington (D. C.) branch of the Locomobile Co. He succeeds James J. Flynn, resigned.

C. F. Pratt, former president of the Ohio Motor Car Co., of Cincinnati, which now is in the hands of a receiver, has joined the Ames Motor Car Co., of Owensboro, Ky. He has been elected vice-president of that concern.

Hugo Ogren, manager of the Colby Motor Car Co.'s Chicago branch, has been transferred to the factory in Mason City, Ia., of which he has been made superintendent. F. Frees has succeeded him as manager of the Chicago establishment.

H. M. Fauvre, manager of the Indianapolis branch of the Diamond Rubber Co., has been promoted to the management of the Chicago branch. He has been succeeded by O. C. Reavell, who previously was connected with the Diamond branch in Kansas City.

W. F. Gordon has been appointed manager of the United States Tire Co.'s branch in Dallas, which controls the States of, Texas, Louisiana, Mississippi and the southern portion of Alabama. Previously Gordon was assistant manager of the United Motor Dallas Co.

T. B. Goodloe, who has been in charge of the Richmond sub-branch of the United States Tire Co., has been appointed manager of the Atlantic branch of the same organization. Goodloe is succeeded in Richmond by J. G. Given, who has been a salesman in the company's Philadelphia territory.

J. L. Perkins, superintendent of the Saurer truck factory in Plainfield, N. J., has relinquished that position to become superintendent of the Rushmore Dynamo Works, in the same city. Before going into motor trucks Perkins for many years was identified with the machine tool industry, having been in charge of important departments in the Pratt & Whitney and Brown & Sharpe plants.

A. H. Jones, former manager of the United States Tire Co.'s branch in Seattle, Wash., has been engaged to manage the branch store in that city which will be opened by Ballou & Wright, the well-known Portland (Ore.) jobbers. The Seattle branch, which will be ready for business about December 15th, will occupy a building now in course of construction at 817 East Pike street.

Imports Gained Ground in September.

September proved a good month in the matter of automobile imports, 83 cars, valued at $165,646, being brought into the country as against 62 cars, valued at $137,253, during September, 1912. The record represents a gain of 34 per cent. in number, but as the average value of the cars fell from $2,214 to $1,995, the increase in value is but 21 per cent.

During the nine months ending with September, 616 cars, valued at $1,403,174, were imported, as compared with 670 cars, valued at $1,450,222, in the first three-quarters of 1911, a loss of 3 per cent. in value and 8 per cent. in number. The record in detail follows:

	1911		1912	
	No.	Value.	No.	Value.
France	18	$41,297	48	$109,004
Germany	3	7,484	5	11,515
Italy	13	24,014	22	30,363
United K'dom.	14	34,102	6	13,395
Oth. countries.	14	30,356	2	1,369
Total	62	$137,253	83	$165,646

Earl Head of Machine Screw Co.

Having been taken over by the American Hardware Corporation, the Universal Machine Screw Co., of Hartford, Conn., has elected as its president Clarence A. Earl, who is general manager of the Corbin Screw Division of the Hardware corporation. The other officers are as follows: Secretary and treasurer, F. Goodwin Smith, Hartford; directors: Clarence A. Earl, F. Goodwin Smith, Colonel C. L. F. Robinson, Hartford, president of the Travelers Insurance Co., and Colonel C. M. Jarvis.

Uncel Sam Sues Stepney Wheel.

For failure to file its corporation report for the year ending December 31, 1910, on time, the Federal government on Monday last, 4th inst., instituted an action against the American Stepney Spare Wheel Co. in the United States District Court for the Southern District of New York. The penalty asked is $10,000, but many such actions, provided the corporation law is complied with, are settled outside of court for $25.

Wagner Dips Deeper into Right Oil.

Fred J. Wagner has assumed the general management of the Consolidated Lubricating Co., of New York, in which he has been a stockholder but has taken no very active part. He succeeds to most of the duties of A. R. Pardington who, however, remains president of the company, which produces the Right oils. J. C. Nichols will continue as treasurer of the company.

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AMERICAN CARS CONTINUE GAINS IN FOREIGN FIELD

Export Figures for September Show Increase in Nearly Every Part of the Globe—Total Close to $2,500,000 Mark.

Not only did September develop a substantial gain in automobile exports over the corresponding period of the previous year, but the statistics for September last proved that, contrary to the general condition, but one of the twelve geographical divisions into which the Federal government divides the world showed a loss in number and valuation of cars shipped to other lands; substantial increases were shown, the largest being credited to Canada, which purchased 305 more cars than a year ago at an increased valuation of $219,880, a gain of 183 per cent. in number and 87 per cent. in valuation.

So far as percentage gains are concerned, however, that comprehensive division known as Other Countries is well at the fore, with an increase of 400 per cent. in number and 312 per cent. in valuation, even though this actually means only 84 more cars and an increase of $73,627. The largest number of cars to be shipped to any country went to Canada, 471 cars, valued at $473,465 being consigned to this British dependency. At the foot of the list in value of imports is West Indies and Bermuda, the cars sent to these islands numbering but 23 and had a valuation of $19,750. Following Canada in order of value of cars taken are British Oceania, 231 cars, $194,471; Asia and Other Oceania, 180 cars, $155,676; South America, 150 cars, $153,919; United Kingdom, 153 cars, $104,080; after these the values drop into five figures.

In valuation percentage gains Other Countries, as previously stated, leads with 312 per cent. A close second, however, is Asia and Other Oceania, whose gain in dollars amounted to 247 per cent., or $110,857, the gain in number of cars being but 131, or 27 per cent. The only other country to double the value of its imports over the preceding September was Mexico, which ordered 6 cars more, a gain of 24 per cent. and an increase of 106 per cent., or $36,870, over the value of the former shipments. Noteworthy gains in valuation were made by Italy and France, the former increasing the value of its takings by $10,473, or 80 per cent., while France, with an added monetary gain of $13,914, was 64 per cent. better.

Four divisions more than doubled the number of cars taken in September, 1911; these with the gain in number and percentage, respectively, are: Other Countries, 84, 400; Germany, 26, 236; Canada, 305, 183; France, 34, 121.

British Oceania presented a peculiar combination of figures, a gain in the number of cars but a loss in valuation. In September, 1911, 206 cars, valued at $199,654, were purchased, while in that month this year the number of cars was 231 and the value had shrunk to $194,471, a gain of 12 per cent. in number and a loss of 2½ per cent. in value. The United Kingdom decreased its takings markedly, showing a falling off of 64 per cent. in number and 65 per cent. in value. The first nine months of 1912 are better by $6,687,265, or 58 per cent., than the same period of 1911; the number gain was 7,162, or 63 per cent. The average prices per car were: September, 1911, $967; September, 1912, $906.

The American possessions — Hawaii, Porto Rico and the Philippines—for September, 1912, increased the number of cars bought by 124 and the vaulation by $48,659, respective percentage gains of 288 and 56. For the two Septembers, that of 1912, in valuation of cars, parts and engines shipped to all countries, exceeds that of 1911 by $565,285, or 32 per cent. The average price per car sent to the American possessions in September, 1911, was $1,996, and for the same month this year, $805.

Engine Exports Still Expanding.

Engines to the number of 517, valued at $110,068, were exported in September, 1912, which was a gain of $65,921, or 150 per cent. The two comparative nine-month periods also showed a gain for the more recent of $769,106, or 174 per cent., the totals being, 1911, $65,097; 1912, $834,203.

Tire Exports Show Good Increase.

The value of the tires shipped from the United States in September, 1911, was $266,499, and in September, 1912, $357,040, a gain of $90,451, or 34 per cent. The first nine months of 1912 gained over that period of 1911 by $750,468, or 31 per cent., the respective values being $3,025,736 and $2,375,268.

The record in detail is shown by the appended table:

	September				Nine Months Ending September					
	1911		1912		1910		1911		1912	
Automobiles—Exported to—	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.
France	28	$21,624	62	$45,538	202	$620,842	352	$393,448	543	$414,493
Germany	11	8,050	37	26,022	100	287,968	90	106,382	347	270,769
Italy	19	13,046	33	23,519	104	345,898	161	188,557	241	214,651
United Kingdom	427	302,941	153	104,080	1,171	2,161,065	2,563	2,170,264	3,942	2,944,118
Other Europe	59	59,683	114	73,620	365	586,677	633	601,486	1,278	1,044,658
Canada	166	253,585	471	473,465	3,042	3,098,242	4,107	4,493,287	5,988	7,213,639
Mexico	25	34,694	31	71,564	246	461,540	187	311,427	181	289,873
West Indies and Bermuda	20	19,188	23	19,750	159	254,099	213	249,799	238	250,698
South America	128	140,983	150	153,919	246	274,872	664	867,292	1,395	1,615,378
British Oceania	206	199,654	231	194,471	408	303,108	1,467	1,353,398	2,585	2,355,520
Asia and other Oceania	49	44,819	180	155,676	214	245,804	603	611,805	1,135	1,143,251
Other countries	21	23,277	105	96,904	215	233,951	204	217,889	533	495,251
Cars	....	.....	40	85,997	....	.....	.....	.....	*175	*349,700
Trucks	....	.....	1,550	1,352,531	....	.....	.....	.....	*4,371	*4,187,064
Total Automobiles	1,159	$1,121,544	1,590	$1,438,528	6,472	$8,874,066	11,244	$11,565,034	18,406	$18,252,299
Parts	....	215,278	....	282,287	....	1,545,933	.....	2,423,259	.....	3,607,410
Tires	....	226,451	....	292,809	....	431,283	.....	1,941,773	.....	2,533,635
Engines	379	44,147	517	110,068	....	.....	547	65,097	6,833	834,203
Total Cars, Parts and Engines	....	$1,607,420	....	$2,123,692	....	$10,851,282	.....	$15,995,163	.....	$25,227,547
To American Possessions—										
Cars	43	85,820	167	134,479	560	957,931	662	1,151,029	1,106	1,624,318
Parts	....	34,245	....	16,416	....	152,928	.....	174,858	.....	190,417
Tires	....	46,048	....	64,231	....	†77,147	.....	433,495	.....	492,101
Total	43	$166,113	167	$215,126	560	$1,188,006	662	$1,759,382	1,106	$2,306,836
Grand Total All Countries	1,202	$1,773,533	1,757	$2,338,818	7,032	$12,039,288	11,906	$17,754,545	19,512	$27,534,383

*Figures cover period since July 1, 1912. †Figures cover period since July 1, 1912, and automobile tires to the Philippines are not listed separately.

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REVERSION TO BEVEL GEAR FEATURE OF LONDON SHOW

Worm Drive Loses Ground, Though Some Makers Still Recommend It —"Cycle Cars" Constitute Chief Items of Newness.

Since last year, with its influx of Knight engines and other sleeve and rotary and piston valve engines, its front wheel brakes and worm drive to the rear axle, little, if anything, really startling has developed abroad, according to the exhibits which were thrown open to the public at the annual Olympic show in London, England, on Monday, 11th inst.

Perhaps the most significant trend in construction is revealed in a slow but sure reversion to bevel drive from worm drive. A number of manufacturers who last year equipped their products with worm driven axles still adhere to them, though the majority have reverted boldly to the older bevel drive and some few others list their cars with optional equipment, recommendation being made, however, that the bevel drive be chosen. Just why the return to favor of the bevel drive is a feature is not exactly clear, though it would seem to be the concensus of opinion that the worm is not as efficient at low speeds as is the bevel drive.

Despite the marked tendency toward the production of low priced and medium powered six-cylinder engines in the United States, which really is one of the features of the American market at the present time, no such tendency exists abroad. As has on more than one occasion been remarked, "the battle of the cylinders" has been fought and apparently "sixes" have been left for the larger and more luxurious cars. With few exceptions light cars are fitted with four-cylinder motors, though the usual crop of single and two-cylinder motors is quite as abundant as heretofore.

The demand for some sort of a cross between the motorcycle and the automobile has stimulated the production of an entirely new breed of vehicle which in British parlance is styled a "cycle car," and which generally mounts a single or two-cylinder motor up forward under a hood a la automobile with a miniature body providing accommodations for only one passenger, or possibly two passengers seated tandem fashion. Such vehicles are very light, though their usefulness necessarily is restricted, and it is doubtful if it is as great as the usefulness of either of its fathers. Incidentally, in the construction of full size cars the tendency of manufacturers is to center production on a smaller number of models and to put into them better workmanship and better finish.

With regard to mechanism, the striving for quietness still obtains and is apparent in the refined valve mechanism, valve covers, greater care in machining gears and a more careful balancing and finishing of reciprocating parts in order to reduce vibration. Just as certainly as the Knight engine and some of the other so-called valveless engines have bred a desire for quietness, so have they stimulated manufacturers of poppet valve engines into greater activity in reducing the noises of their products, and so successful have some of the latter been that, though the Knight engine probably is just as popular as it was last year, it is doubtful if it has made any very great strides during the past twelvemonth.

Quite naturally, electric lights have appealed to the conservative British motorist and the result of the appeal is evidenced in the increasing number of electric lighting systems which are being placed on the market; in the main they are quite similar to those with which American motorists are familiar. Similarly, the electric engine starter, which at the last Olympic show was conspicuous by its absence, also at last is claiming attention, as is the acetylene type of starter.

Needless to add, the broad subject of carburation has proven a fertile field for investigation. Several new "petrol" carburetters have put in an appearance, with claims chiefly for greater flexibility and greater economy.

Stock-Selling Suit To Be Retried.

Michael P. Caffe, who sued the Newark Automobile Manufacturing Co., of Newark, N. J., as the result of a stock-selling deal, and who was defeated in the New York City Court, has secured a reversal of this verdict in the Appellate Term of the Supreme Court for New York county, and this branch of the judiciary has ruled that he shall have a new trial. In the first trial he was ordered to pay a judgment of $73.83 costs.

Caffe is the assignee of Charles Hallock, who, it is stated, with one L. R. Bonta, entered into an agreement with the Newark company to sell $160,000 worth of the company's stock, they to have exclusive selling rights during the term of the contract. Bonta later assigned his rights in the contract to Hallock. The claim is that while this agreement was still in force the Newark company of its own accord sold stock to the value of $39,500 and that Hallock thereby became entitled to a commission of $5,775. The verdict in the City Court was directed by the judge on July 12 last. The Newark company itself since has gone into bankruptcy.

TRAVELING SALESMAN ACTS AGAINST TRUCK COMPANY

His Contract Cancelled, He Sues for Commissions and Attaches General Motors' New York Property—Attachment Vacated.

Roy E. Taylor, of New York City, last week brought suit in the Supreme Court for New York county against the General Motors Truck Co., of Detroit, Mich., alleging that he is entitled to $1,969.93 as commissions on an extensive campaign as a traveling representative throughout all New England and the entire Atlantic seaboard as far inland as Kentucky and Tennessee. As a preliminary move he, on Thursday last, 7th inst., secured an attachment against the New York property of the truck company, which, however, caused the attachment to be vacated on Saturday by giving a bond.

Tayor claims he entered into his contract August 15 last and that it was stipulated that he should work his rather extensive territory on a commission of 15 per cent. of the net price of whatever trucks were purchased by the dealers he signed up. The net price of the trucks sold was $62,943.75, which brought, Taylor claims, with $6.55 incidental expenses, a total of $3,153.74. From this, however, he deducts $1,183.81, being the amount of money advanced by the General Motors and the commission on a contract that was canceled, leaving due him $1,969.93.

The contract between Taylor and the truck company, he states, contained a clause specifying that 60 days' notice was necessary in case it was desired to terminate the contract; his complaint alleges that he received notice of dismissal September 19 and that his term of employment therefore is not due to end until next Tuesday, 19th inst. Following his dismissal, he attempted to collect, and when a satisfactory settlement was not forthcoming he brought suit.

Two More Sail to Foreign Shores.

John G. Perrin, chief engineer of the Lozier Motor Co., and Paul Kehrig, representing the Oakland Motor Car Co., sailed to Europe on Thursday last, 7th inst. While both men are bent on seeing all that they may see, their particular objectives are the London and Paris shows.

Motz Establishes Branch in Boston.

The Motz Tire & Rubber Co., of Akron, O., which heretofore has been represented in New England by an agency, has taken over its interests and established a factory branch in Boston at 4 Dundee street. It is in charge of M. A. Frank.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN E. F. HALLOCK

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Advertising Manager
HOWARD L. SPOHN LOUIS R. SMITH

WESTERN ADVERTISING MANAGER
W. H. TRIPP, 1001 Ford Building, Detroit
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NEW YORK, NOVEMBER 14, 1912

NICKLED TRIMMINGS A DELUSION?

To accept as good anything that looks good and is in popular favor is a too general tendency. Sometimes the good-looking thing may be true to its appearance; sometimes it may prove otherwise. Sometimes it is good only for a short while and then relapses into an undesirable condition. All of which may be applied, with an interrogation point, to nickel as a finish for automobile parts.

The question at issue is not that of the relative attractiveness of nickel and brass or the labor involved in keeping them bright. The question is whether the durability of the plating is sufficient to warrant its use. However well nickel may look when in good condidtion, there is nothing much shabbier than a nickeled part from which the plating has been worn in spots showing the dull metal underneath. And, short as has been the vogue of nickel, there already are many cars the nickeled parts of which are so mottled by wear as to badly mar their otherwise spick and span appearance. Plain brass is preferable to nickel in such a condition, even in the eyes of those with strong leanings toward the silvery finish.

No small importance attaches to the matter of polishes when nickel is used, for under the action of the abrasives and chemicals in so-called "lightning brighteners" the plating disappears rapidly. What with natural wear and unnatural cleaning compounds, nickel seems to be due for troubles of its own. And even worse than the polishes are the cheap and easily made "plating solutions" of acid and mercury. These concoctions produce a fine bright finish—which vanishes in a few hours, leaving the surface corroded from the effects of the acid. These chemical crimes are sold for plating brass and worn spots on nickeled parts.

There would appear to be only one way in which the desired silvery appearance can be both obtained and retained, viz., by making bright parts of metal of uniform color throughout. German silver already has been somewhat extensively used for windshield frames, which simply goes to show that the inadequacy of nickel has been recognized by the makers of these things. While German silver is of insufficient strength for many automobile parts, there are metals which are superior to it in appearance and are stronger than brass; these might well be used for making parts that are to be finished bright. As to the question of cost, it will be up to the manufacturer to decide whether he will invest his cars with an evanescent brightness, incur the expense of a more costly material—or go back to brass. Certainly something should be done before manufacturers' plans have been carried so far as to make changes inconvenient and unnecessarily costly.

GUNNING FOR "AUTOMOBILE MONEY."

What the tariff is to congress, the automobile laws now are to the various State legislatures, and, elections being out of the way, legislative gunning for "automobile money" again is acquiring momentum.

New York, as usual, is leading the way. It is a sad year when the automobile law of the Empire State is not tinkered with. The tinkers already are in private session and, as always, the cry has gone up for more money, despite the fact that the establishment of the State automobile bureau provided jobs for more of the "boys" than the sponsors of the original law ever dreamed of.

The revenue derived now exceeds $1,000,000 a year, but it is not enough, and as by far the greatest number of cars in use are of relatively small power and relatively small price, indicating that their owners are men of moderate means, apparently the chief aim of the present legislative tinkers is to compel such owners to pay a still higher price for what was once considered the inherent right to use the public highways, which use remains free for all others.

It is proposed that instead of the present fixed schedule New York cars shall be taxed on the basis of a flat rate per horsepower, say, 50 cents, which will greatly increase the income of the automobile bureau and probably lead to the employment of more of the "boys," even if it does not provide an excess sufficient to improve at least a quarter-mile stretch of road.

The fact that in addition to paying for the right to use the roads the automobilists of New York also are bearing their share of a $50,000,000 bond issue for road improvement, and just have given their support to another issue of the same amount, appears to count as nothing. Apparently they are fair game for politicians of whatever creed and are fit only to be "plucked."

As a matter of principle, it is to be hoped that the automobile organizations of the State will resist the proposed "replucking" operations.

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"SNAPPING" SKIDS WITH A MOTION PICTURE MACHINE

Photographic Evidence Afforded by "Movies" Cleverly Employed by Tire Manufacturer—Films for Demonstrating Purposes.

Comparisons may be odious, and doubtless they often are; but there are cases when they are extremely useful. This was the case when the Diamond Rubber Co. made use of moving pictures to make comparisons between smooth tread tires and Diamond safety tread tires under road conditions conducive to skidding and sliding. An Akron street was made slippery by wetting its surface for a block and around a corner into the next block, and two cars, each equipped with one of the different types of tires, were tried out in front of the camera's watchful "eye."

The car with the smooth tread tires went around the corner at a speed of thirty miles an hour, and naturally made a skid that turned the car completely around, while the car with the safety treads, driven at the same speed, turned the corner without skidding. Brake tests, made at similar speeds, resulted in the same way, the smooth treads slipping and permitting the car to "turn round and look at herself," while the safety treads held and the car was stopped in a short distance. The moving pictures taken of the tests will be used for demonstration purposes. They will be exhibited first to the various Diamond tire salesmen and afterwards the public may be given a look.

Electric Dealers Complete Association.

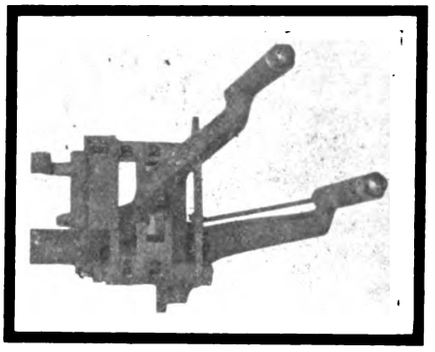
Completing the organization of the New York Electric Vehicle Association, of which Arthur Williams, of the New York Edison Co., and William P. Kennedy, of the Baker Motor Vehicle Co., were made president and vice-president, respectively, at the time of its formation on September 17th last, Henry C. Fling, Harvey Robinson and Arthur Miller were appointed secretary, treasurer and publicity manager, respectively, at a meeting of the board of directors held last week. At the same time, committees were appointed on charging stations, co-operative garage, traffic and service runs, operating costs, advertising and publicity and membership.

The directors of the association are as follows: E. W. Curtis, Jr., General Vehicle Co.; S. W. Menefee, Anderson Electric Car Co.; Nathaniel Platt, Baker Vehicle Co.; C. Y. Kenworthy, Rauch & Lang; M. G. Macdonald, Hupp-Yeats; W. R. Chandler, Flanders; George H. Phelps, Studebaker; V. A. Villar, Champion; John H. Kennard, Couple Gear; W. L. Case, Lansden; Chas. A. Ward, Ward, and A. B. Roeder, International Fritchie. Of these, Platt, Kenworthy, Menefee and Villar and the officers constitute the executive committee.

Little Known Features of Well Known Cars

As a means of preventing the change gear lever from entering the reverse slot unless it is the specific intention of the driver so to place it, the orthodox dog operated by means of a button or a small lever positioned on the handle of the lever has been used since the time selectively-operated change-gearsets first attained to popularity.

One of the little known features of the Haynes cars incorporates the same idea,



HAYNES GEAR SHIFT QUADRANT

which, however, is differently worked out in the design of the plate, which is positioned on the H plate, through which the gear shift lever works, and prevents the lever from being placed in the added slot, in which position the electric starting motor is in gear, through carelessness or thoughtlessness on the part of the operator. Incidentally the arrangement obviates the possibility of damage resulting by reason of the unwelcome attention of street urchins or other unauthorized persons.

The plate, which is hinged and provided with a spring, covers the slot at all times when the slot is not in use, and prevents the entrance of the lever. When it is desired to shift the lever into the starting position, the toe is placed on the small kick lever and the plate is raised against the action of the spring. Since the device must be operated by the foot, there is but slight chance of the operator throwing the starting motor in gear when the engine is running and stripping the gears. When the engine has been started, the gearshift lever is released and automatically brought back into the neutral position by means of springs.



November 8-16, London, England—Society of Motor Manufacturers and Traders' annual show in Olympia Hall.

November 16-23, Atlanta, Ga.—Second annual show of the Atlanta Automobile and Accessory Dealers' Association in the Auditorium-Armory

November 26-30, Grand Rapids, Mich.—Fourth annual show of the Grand Rapids Automobile Dealer's Association in the Klingman Exposition Building.

December 7-22, Paris, France—Paris Salon.

January 6-11, Cleveland, Ohio—Cleveland Automobile Show Co.'s exhibit in the Central Armory.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, Philadelphia, Pa.—Philadelphia Automobile Trade Association's exhibit in the First and Third Regiment Armories.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

January 27-February 1, Detroit, Mich.—Detroit Automobile Dealers' Association's show in Wayne Gardens.

January 27-February 1, Buffalo, N. Y.—Buffalo Automobile Dealers' Association's Show in the State Armory.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

February 10-15, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Commercial vehicles only.

February 10-15, Minneapolis, Minn.—Minneapolis Automobile Show Co.'s show in the National Guard Armory.

February 17-22, Kansas City, Mo.—Kansas City Automobile Dealers' Association's show in the Convention Hall.

March 3-8, Pittsburgh, Pa.—Pittsburgh Automobile Dealers' Association's show in Duquesne Garden.

March 24-29, Indianapolis, Ind.—Indianapolis Automobile Trade Association's show.

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Solutions of The Used Car Problem

In Competition For

Motor World's Cash Premiums of $50, $25, $15 and $10 For the Four Best Articles Dealing With the Subject.

By A KANSAS DEALER.

In dealing with the second-hand car situation one must consider many things, and not all of them have been considered, and in the articles appearing in Motor World, in fact, I have not seen anything that appears to cover the situation very thoroughly, although some very good ideas have been set forth.

A manufacturer states that the best thing to do is to take the car in low enough so it can be sold at a profit. Very good advice, but this is sometimes hard to do. A dealer may trade for a car that appears to be worth the money he allowed for it, but upon closer, internal examination he will find that it is in worse shape than he supposed, therefore he will either have to repair the machine and add to the cost or must lose on the transaction.

The best thing to do, as a rule, is to make a fair allowance in trading for a second-hand car. Try to deal fairly with the customer and allow all you can, but try to leave a margin for unseen defects.

As to the disposition of the second-hand cars, it is small wonder that they are slow sellers, considering the way the average dealer handles this line of goods.

He trades for a car and then puts it into a back room among the storage or junk, and allows the tires to go down, the brass or nickel to tarnish, and otherwise so neglects it that the car presents a disreputable and run-down-at-the-heel appearance. This is just exactly what should be avoided. If the dealer has cars standing around the shop bearing the general appearance of "junk," the prospective customer is very likely to agree that they are junk, regardless of the argument put forth to dispose of them.

Have you ever observed how some sharp business man will buy a piece of second-class real estate and by repairing the fence, windows, doors and roof and adding a coat or two of paint he is able to sell it for almost double what he paid for it? This is a case of where $100 spent for repairs will add $500 to the property, and the rule holds good with any second-hand machine.

I think the following rules will greatly assist in unloading the second-hand machine of, say, three seasons' use, supposing it to be in the average condition:

Clean the machine thoroughly, removing all dirt and grease from the engine, gear and wheels. If the paint is in good shape, have a painter give the machine a good coat of varnish, but if it needs painting have it done.

Have the metal work cleaned, and if the brass is old, add a coat of some new polish like "Silver-Quick."

See that the tires are repaired and kept pumped up. Nothing adds a more deplorable look to a second-hand car than having three out of the four tires "flat."

If the car has a top and it is faded, a coat of dye will do it good; if it is torn, or any buttons are off, see that they are put on and that the curtains are serviceable.

See that the car will run. If the engine requires attention, don't be afraid to do the necessary work. This does not mean a thorough overhauling, but enough work should be done on the car until you may say truthfully it is in "good running order." Do not dope the gears with a temporary "noise eliminator" for that is an old dodge that long since played out. The buying public is being educated and is looking for such tricks.

Be able to tell a customer the truth about the car, the same as if you were selling him a new one. That is, do not misrepresent anything. Be able to back up all you say. If you tell your prospective customer that you will swear that so-and-so is in fine shape and he takes the car and finds you deliberately misrepresented it, he will tell all his friends that you cannot be depended on.

Keep your cars in a clean, well lighted room, and keep the car, or cars, dusted and presentable and ready to run at a moment's notice. If you have a prospect and he wants to see the car run and you have to spend an hour pumping tires, etc., he is liable to change his mind. If a dealer has many second-hand cars at a time he had better detail a man or two to look after this department; he will find that it will pay.

Every dealer has to trade for a second-hand machine occasionally, and if it is in good shape of course the above treatment will not be necessary, but it always pays to improve the second-hand car as much as possible and it will be found that it can be sold for a hundred or two hundred dollars more than expected if judgment is used in handling it.

Get a reputation of treating a man fairly on a second-hand deal, and you will find that he will send others to you. There are a great many people who would rather buy a good second-hand car than to buy a cheap new one, and this class of trade is generally worth while.

Don't be afraid to tell the people what you have for sale. Advertise—both in the local papers and a few good automobile trade journals. However, make your ads large enough to attract attention. A few well placed ads in two or three papers will beat 200 tucked away in obscure corners. When I see a man trying to do business without advertising, it reminds be of a card I saw a year ago: "Trying to do business without advertising is like winking at a girl in the dark; you may know what you are doing but no one else does."

Having handled automobiles for 10 years and traded for a great many second-hand cars in that length of time, I feel that my suggestions roughly cover the ground. In conclusion, I may say that we have always made a neat profit on second-hand cars, and have never traded for one that was a losing proposition, although we allowed the customer a fair price.

There is only one way to handle the second-hand situation —give the people a square deal. If you follow this rule on the second-hand deals as well as on your new cars, you will have no cause for complaint.

The profit on a new car is generally tied up in the one taken in trade, and it therefore stands to reason that dealers should use good judgment in making the second sale. No dealer enjoys the second-hand part of the business, but as it is a necessary annex it should be handled in a manner that will carry a profit on the right side of the ledger.

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FAR REACHING MEANING OF SERVICE AND ITS EFFECTS.

Of course, the automobile dealer is like every other merchant; he is in business primarily for the purpose of making money. As this is the object of all business and all work, he need not be ashamed of it.

The successful merchant who remains successful knows that the fundamental fact that draws and holds trade is service.

Real Importance of Real Service.

Every business success is founded and maintained on service. It enters into the most ordinary things. For example, a housekeeper started trading at a certain grocery store. The store was clean, the clerks polite, and bills rendered promptly and correctly, but the store had one great fault. No matter how badly one wanted an article the grocer did not chance to stock, he never offered to get it; he simply said he did not have it.

In summer time this grocery discontinued the sale of fruits and greens, because they said there was too much competition on the part of the peddlers and there was no money in it for them. They looked always on their side, their convenience, instead of the customer's.

How Anticipatory Methods Save Trade.

There was a certain brand of imported marmalade of which the customer used at least one jar a week. The grocer appeared to buy it in lots of one jar, and if he ran out of it, as he frequently did, the chances were he wouldn't have it in again for a couple of weeks. In the mean time the customer was forced to buy it elsewhere.

As the grocer knew that this marmalade was one of the particular little things the customer wanted, it would have been good business for him to have furnished it, even if he had to buy it from a competitor and retail it without a cent of profit. But, too short-sighted for that sort of thing, he merely said he would not have any for two weeks, and let it go at that.

Of course, the housekeeper went to another store for it, and while there thought she might just as well leave her entire order.

When her husband came home that night she said, "I am tired of trying to trade at "Sleeper's." I know he is a friend of yours, but I simply cannot be bothered going to four or five places for the things that every good grocer should stock and, if you have no objection, we will trade at Lively's. The prices may be a little higher, but the few cents difference will be more than made up by the completeness of their service."

Analogy Between Groceries and Cars.

Thus Sleeper, with his good store and prompt deliveries, lost the trade simply because he and his employes did not understand that service consists in more than prompt deliveries; it consists just as much in carrying in stock or getting the things that a customer wants.

Good customers have been lost to automobile dealers for precisely similar reasons. The little things that make or unmake customers for the grocer, the drygoods man or any other merchant are the simple, ordinary things that win or lose them for the automobile dealer.

Spirit of Readiness That "Takes."

Once you establish a customer, serve him in as many ways as you can; don't let him start trading elsewhere. If you do, it may mean the loss of a car sale to someone else; for the thing that outweighs price to every knowing motorist is service; and it isn't always the service that consists of free replacements and free work; rather is it the spirit of readiness and the desire to serve in all ways that places the customer's interests first, impressed on every employe, that makes every customer a booster and ties him so firmly to you that he has neither inclination nor desire to switch his trade to someone else.

WINDOW DISPLAYS WITHOUT CARS.

"What is one to do in the matter of window displays when he cannot get cars to dispay? Even if we had a car we would not dare to put it in our window, because we are over 27 cars behind on deliveries."

That was the pertinent query of an automobile dealer.

"Are all your salesmen on a vacation?" was asked him.

"Of course not; they are working just as hard as ever—and they are getting orders. We sold three cars yesterday."

"Vacationing" Display Space a Loss.

"Well, then, your window is a salesman; why give it a vacation?"

"That's all right, but how can I use it?"

"Have you any attractive posters? Any reproductions of magazine or newspaper advertisements?" repiled the advocate of window displays. "Have you any good pictures of the factory—or its interior—that makes your car? Couldn't you make an interesting exhibit of the factory, and perhaps show pictures of the men who run it, or of your cars in picturesque surroundings? Or, have you any good local testimonials?"

Advertising Value of Testimonials.

"Why wouldn't it be a bully idea to have a good sign-writer copy the most pointed part of the testimonials in large, readable, lower-case type, together with the writer's name and address—and exhibit one of them in the window for two days, following it with ten or fifteen more, two days apart. Wouldn't that help some?"

"By heck! I never thought of that. It's certainly a good idea and we will work it at once," declared the dealer, as he reached for his file of testimonial letters.

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GARAGE SERVICE THAT BRINGS ITS OWN REWARD.

W. L. Reno, who operates the Pasadena Garage, 531 Larned street, East, Detroit, has a waiting list of would-be customers that is as long as one's arm. This is not a metaphor—it is a fact.

"Bill," as everyone calls him, could build a garage twice the size of his present one, which accommodates thirty-five cars, and still have a waiting list. His success is founded on service. He does not sell cars; he simply conducts an efficient garage. And he does so many little things that are unexpected but much appreciated, that many customers who live two miles away and more take the street cars cheerfully to and from his garage rather than keep their machines at places nearer their homes.

Love of the Job That Means Success.

Reno's system is different from that of most garages. Instead of having a large number of men on duty during the daytime he has only one. At night, when most garages have only one man on, Reno has three men working. Every car in the garage is washed and polished every night. And in the morning his customers do not have to take off the radiator cap and look into the radiator to see if they need water; they have grown indifferent if they have stored in the Pasadena Garage long enough, because experience has taught them that every radiator is filled every night.

And the washers take a pride in their work—and, after all, even if it is only washing and polishing cars, love of the job is the secret of success.

Effect of a Rub With Furniture Polish.

One little incident serves to illustrate the idea that dominates the Pasadena Garage. A customer had driven in from Grand Rapids and his car was a "sight." In the morning when he called for it the little runabout glistened like new. "What on earth have you done to my car? It looks so new it scares me," said the motorist, laughingly. "Oh!" said Reno, "Most of the cars came in pretty clean last night—just dusty, you know—so the boys got through early and went over every car with a little furniture polish; it makes 'em look better, doesn't it?"

Only a little thing, but it is one of the many little things that keeps Bill Reno's customers pleased and helps them to extract a new meaning from the old many phased word service.

SELLING ONE CAR TO THE WHOLE FAMILY.

A salesman who sold Packard cars and who was amazingly successful in his chosen calling let fall one of the secrets of his success in the course of conversation the other day.

Family of Three as an Example.

"When I sell a car I sell the whole family on it," said he. "I mean just this: Supposing there is a family of there—father, mother and son. Now, instead of demonstrating only to the father I make it my business to sell all three of them. During a morning I will call and take the mother out for a drive. I try to impress her with the comfort, the luxury, the easy riding qualities of the car, its safety, security and perfect control. My idea is to have her believe that it is about the safest and most comfortable car in which she ever rode.

Study of Temperament Required.

"Later, I get the son, and we'll suppose he likes speed, as most young fellows do. We make for a country road, and I hit her up to beat the band and show him that the car will do sixty miles to seventy miles an hour; I spin round corners on two wheels, if you please, and eat up the road. He goes away thoroughly happy. Then, about twilight I call for father and take him home swiftly, silently and safely. He gets sold on the convenience and safety and style of the car, and when the family get together there is no inside knocker to spoil my sale of the car."

The thought is to study the temperament of prospects and make demonstrations accordingly. It is the old story of studying customers which is so often forgotten, but which always can be remembered with profit.

ONE WAY OF EXTRACTING THE COIN.

Rochester, N. Y., boasts of one garage that does washing and polishing so thoroughly that it pays to check up the contents of one's car before it is taken out. A 30-horsepower touring car left over night in this place had its sod pan removed, its breather cap taken and the electric lights disconnected—all in the ordinary course of a very ordinary wash and polish. The porter was tipped half a dollar to hunt up the missing parts and discovered all except the breather cap and the light disconnections. The tourist discovered the latter some hours later when he was trying to find the road between Elbridge and Syracuse. On the way home the tourist carefully avoided that garage.

GET RID OF THE JUNK PILE.

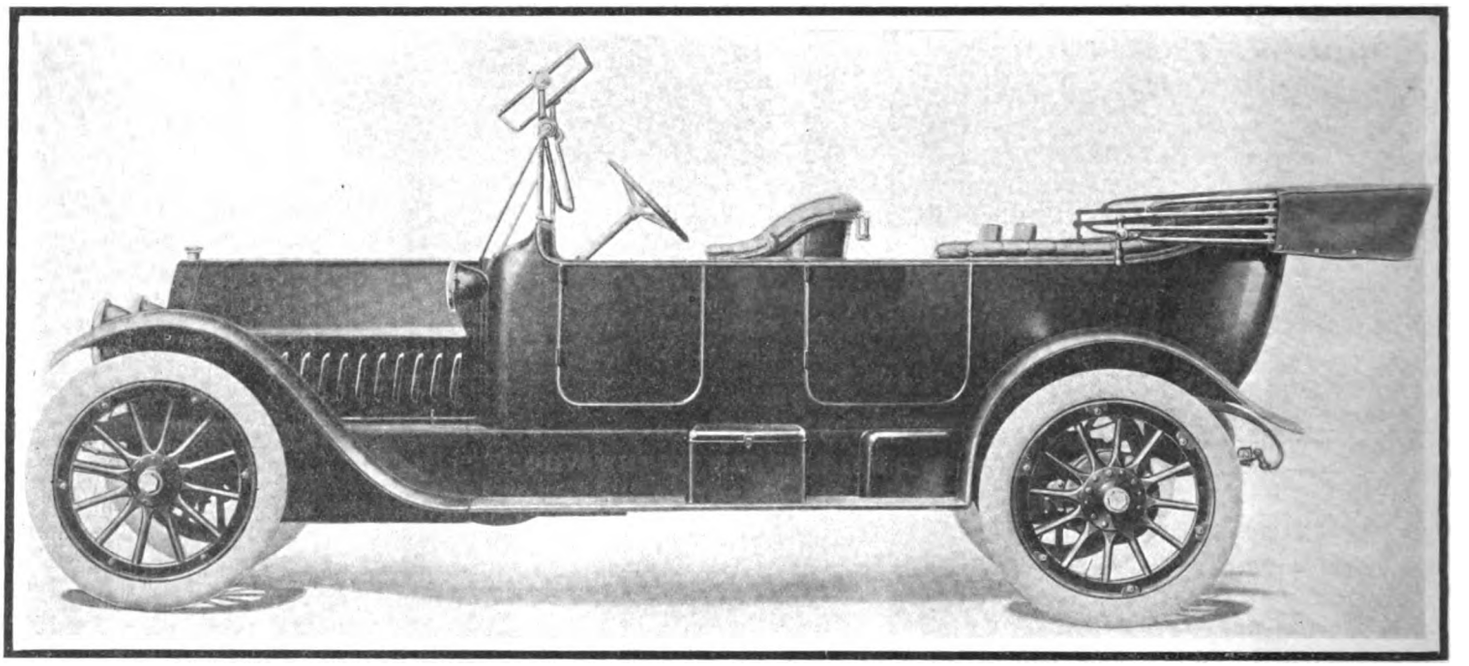
An eyesore of the most virulent type is the pile of old casings, old inner tubes, old rags, old wheels and old what not that greets the visitor to many garages. In many of them will be found the secret of leakages that are costing the dealer money. Dark corners should be kept clean and free from accumulations of odds and ends. Overlooking these seemingly small details has cost many dealers a pretty penny.

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STUDEBAKER LINE RADICALLY RECONSTRUCTED

Rebuilding, Which Is Along Standardized Lines, Includes Addition of Popular-Priced "Six" and Two New "Fours"—Long Stroke Block Motors and Electric Lighting and Starting Systems Employed

Marking a more than ordinarily notable, not to say startling, deviation from previous practice, the Studebaker Corporation of Detroit, Mich., whose E-M-F "30" and Flanders "20" cars, latterly changed in name to Studebaker "30" and Studebaker "20," have remained without substantial alteration for a period of three years, has added to those models three brand new cars which are distinctly different in very nearly every respect from anything that has borne the name Studebaker. Mechanically and in appearance and price, the newcomers are of the sort calculated to make the world sit up and take quick notice.



STUDEBAKER "SIX" WHICH SELLS FOR $1,550, SHOWING WELL-PROPORTIONED LINES AND DOMED MUDGUARDS

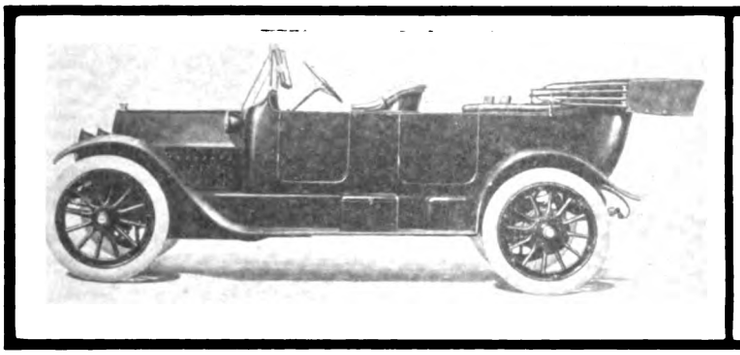
One of the trio is a "six"—an unusually simple and accessible "six," which sells completely equipped, even to a combined electric lighting and engine starting system, at an unusually low price. Furthermore, it is supplied in one model as a limousine, thus marking another innovation in Studebaker products, for until the advent of the new models, the only enclosed model manufactured was a coupe. In the new cars, there is another coupe, and a "Sedan," both mounted on new four-cylinder chassis. The new "six" is styled just plain "six," though it is very far from plain, and the "fours" are designated "25" and "35," respectively, the designations serving in a measure as an indication of their horsepower. All three will be made and marketed supplementary to the well-established Studebaker line.

Carrying out the basic principles of quantity manufacture, essential to the maintenance of minimum "overhead" and bearing direct influence, in turn, on simplicity on service and production cost, there is a very marked similarity in the three new models. In fact, the three motors differ in no whit from each other, except as regards their cylinder dimensions; and all of them are of the typical long-stroke type which now has reached the ascendency. The chassis also are alike except for a difference in wheelbase lengths and in rear axles, the "six" and the "35" employing a new type of full-floating axle and the "25" being fitted with a semi-floating axle. Similarly, the two larger models carry the same types and sizes of bodies.

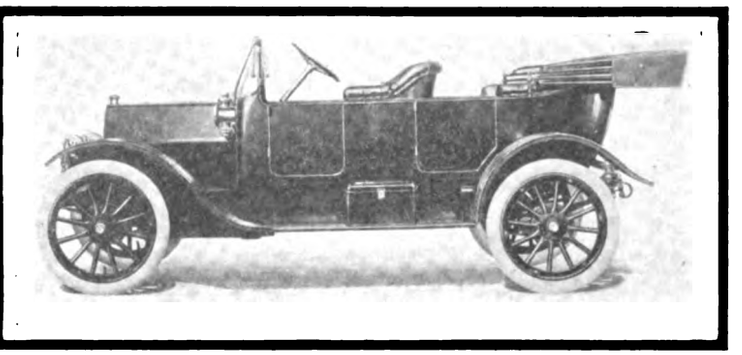
In the design of the motor—as all three are alike the singular use of the word suffices to indicate the plural—and in the design of other parts of the chassis as well, it is but natural that some few typical Studebaker constructional details which have proven of merit should be retained; they are very few, however. The pistons, for instance, are domed slightly and highly polished to discourage accumulations of carbon; the camshaft is forged in one piece and ground in special apparatus which not only ensures cam shape accuracy but forms in the same operation the cam which operates the oil pump; gearsets are mounted as units with the rear axle; all of these features long have been characteristic of Studebaker cars. Incidentally, pride is taken in the fact that a great number of the component parts of the cars are drop forgings, some 300 individual forgings being required for the three cars.

It is needless to point out that insofar as is consistent and practicable everything has been sacrificed to motor efficiency in the construction and design of the power plant. Motor efficiency, in this connection, may be taken to mean wearability, dependability and a high ratio of output to intake. To these ends, all of the motors are single block castings, in the planning of which the best of foreign and American practice has been drawn upon. Thus are the deleterious effects of possible frame weaving on engine bearings eliminated and manufacturing op-

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STUDEBAKER "35" TOURING CAR LISTING AT $1,290

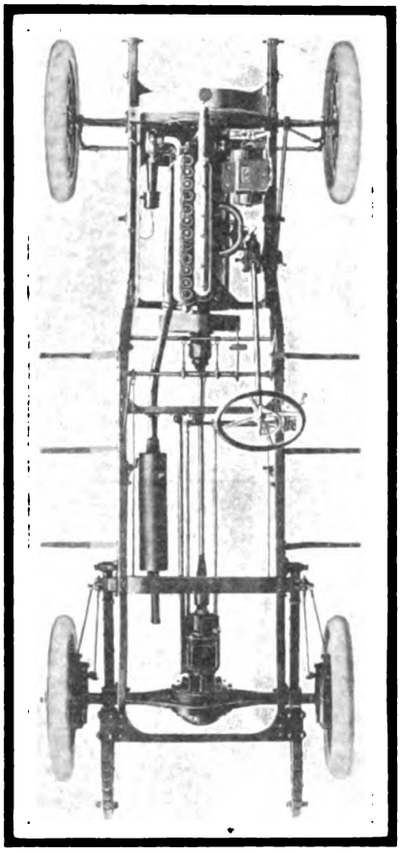


STUDEBAKER "25" WHICH SELLS FOR $885

erations simplified. Indicative of the leaf taken from foreign books, though it rapidly is coming to be recognized as practice par excellence by American designers as well, the magneto and water pump are mounted at the opposite ends of a worm driven transverse shaft at the front end of the engine and over the timing gear train. The shaft is driven by a cross-shaft from the crankshaft gear.

Every precaution has been taken to render the motors impervious to the action of water and impregnable to the assaults of road dust and dirt. The valve mechanism, which is all on the same side, cylinders being of the L-head type, is completely enclosed by means of light removable metallic covers which fit snugly and serve a secondary purpose in reducing necessary noises to a condition of inaudibility. The magneto, a Splitdorf instrument operating a dual ignition system in conjunction with a set of dry cells, is enclosed in a waterproof covering; cylinders are coated with rustproof paint and all bright parts are so highly polished as to present no dirt collecting surfaces.

In dimensioning the cylinders, though there is no room for doubt regarding the aptness of the designation "long stroke," a middle ground rather than an extreme has been adopted. In both the "25" and the "six" the bore and stroke measure 3½ inches and 5 inches, respectively, and in the larger "four" the same dimensions are 4⅛ and 5 inches. From which the interchangeability of the parts, bearing directly on

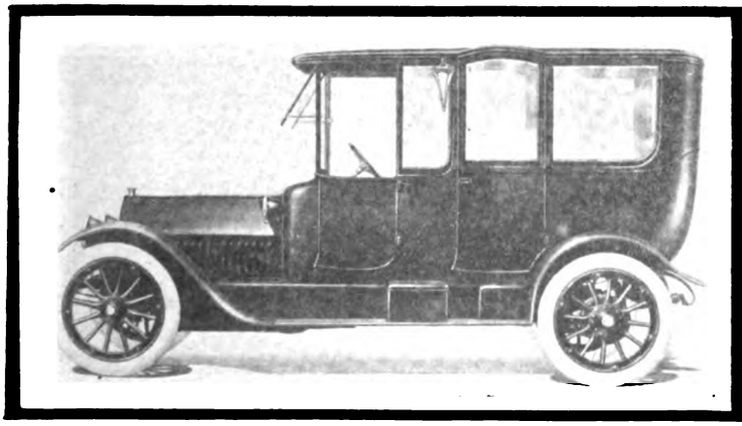


STUDEBAKER "SIX" CHASSIS

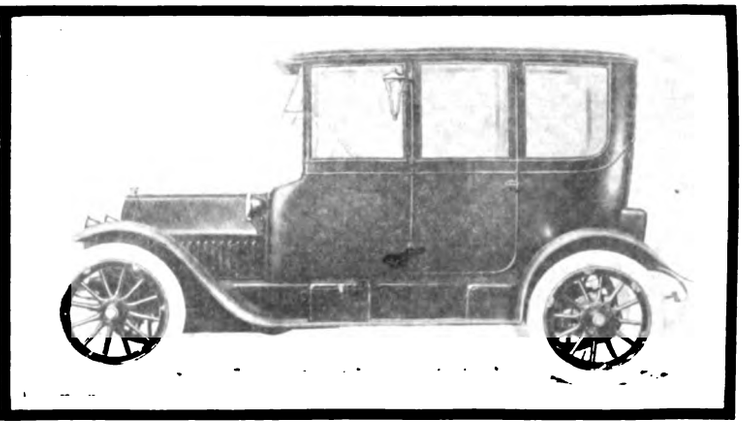
service, may be seen. Also, in view of the dimensions and the ratio of stroke to bore it may be appreciated that the horsepower ratings are nominal at best.

By way of ensuring efficient carburation, free from the possibility of "loading up," and unobstructed exhaust passages, the intake and exhaust manifolds are cast integral. Valves are large with the heads electrically welded to drop-forged stems of liberal diameter and bearing surface. The crankcase is cast bottomless, the place of the lower section being taken by a pressed steel oil reservoir which is readily removable, permitting easy access to the connecting rods and main engine bearings. Lubrication is effected by a method which has proven universally successful, the main oil supply being contained in the pressed steel reservoir, whence it is lifted by a pump through suitable piping and a dash sight feed glass to the timing gear train and to the main engine bearings. Surplus oil drains down into small troughs placed beneath the connecting rod big end bearings and is splashed over the cylinder walls and camshaft bearings, etc. In the "six" the crankcase is made of aluminum; in the other two cars it is cast iron.

The cooling system is identical in all three motors, except for a difference in the size of the parts commensurate with power. Radiators are of ample capacity and the water jackets are proportioned to maintain



STUDEBAKER "SIX" LIMOUSINE SELLING FOR $2,500



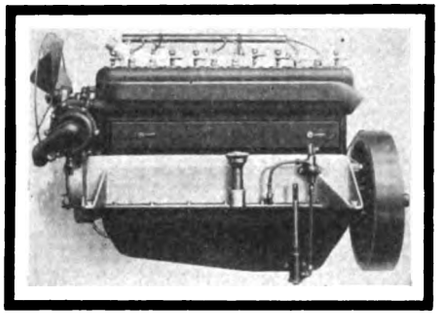
"SEDAN" MODEL ON THE "35" CHASSIS

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engine temperature at the degree proper for greatest efficiency. One peculiarity of construction which tends to illuminate the thoroughness of design is that the circulation system is arranged to admit the water first on the valve side. Thus the valves are benefited by the relatively cooler water and are less likely to pit and warp because of excessive heat.

The combined electric lighting and engine starting with which both the "six" and the four-cylinder "35" are equipped is the result of collaboration between the Studebaker engineers and the engineers of the Wagner Electric Co. of St. Louis, the latter company being the manufacturer of the devices. Its adaption is such as to warrant little or no attention at the hands of the owner or driver of the car, and its various functions are automatic.

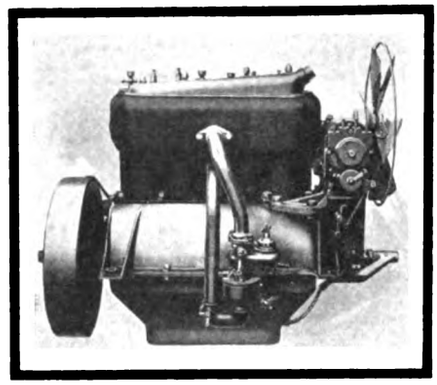
The principal unit of the system is a combined generator and electric motor. It is mounted on a base on the crankcase of the engine and is driven and drives through the



VALVE SIDE "SIX" MOTOR

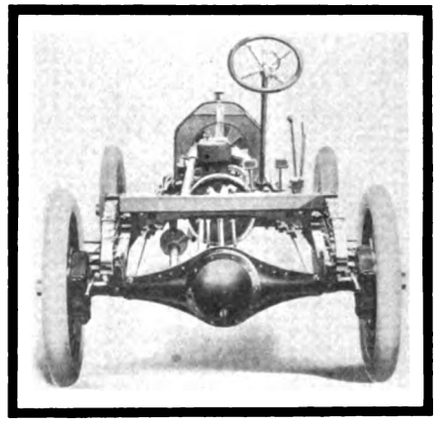
intermediary of a "silent" chain running over a sprocket wheel on the crankshaft of the engine. Mounted with the armature shaft of the motor-generator there is a set of gears to alter the gear ratio between the armature and the crankshaft, according to whether the motor-generator is generating current or operating as a motor to start the car engine. The gears are thrown into mesh by means of a cable, which, when held taut by the operator, enmeshes the gears and in the same operation turns on the current from the storage battery, causing the engine to be "turned over" at the rate of about 80 revolutions a minute. When the engine picks up its own cycle of operations, and the cable is released, the motor becomes a generator and charges the storage battery against its future use. The four-cylinder model "25" is equipped with a simple acetylene gas primer-starter.

From the engine, power is transmitted by means of a cone clutch amply proportioned to resist wear and to ensure smooth action without slip or unsuspected grip. The gearset in each case is enclosed in a unit housing with the differential mechanism, after the manner made familiar in previous Studebaker products. Three speeds forward and reverse are provided, control being selective by means of the orthodox hand lever. In the new rear axle which has been adopted for the "35" and the "six," the weight of the car is carried on the ends of the pressed steel housing and it is possible to remove either or both of the driving axles without disturbing any of the mech-



MANIFOLD SIDE "25" MOTOR

anism or its adjustments. The "25" is fitted with a semi-floating rear axle in which the upper half of the differential housing is removable, permitting easy access to the gears. Control in each case is from the right side, the steering wheel, mounting the spark and throttle levers being at the right side, with the gear shaft and emergency brake levers at the driver's right hand.

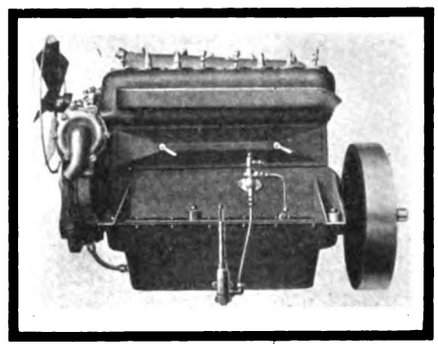


NEW FULL-FLOATING AXLE

In the two larger models, the "six" with 120 inches and the "35" with 116 inches wheelbase, the chassis is supported on semi-elliptic front springs and three-quarter elliptic rear springs. The "25" has semi-elliptic front springs and full elliptic rear members. Materially enhancing the appearance of the cars and at the same time reducing the discomforts of travel in rainy weather or over muddy roads, the fenders are crowned slightly to conform to the curvature of the tires. In the two large models the wheels are shod with 34 x 4 inch Goodrich tires mounted on Booth demountable quick-detachable rims. The "25" is equipped with demountable rims and 30 x 3½ inch tires. The steering gear in each case is of the worm and full wheel type.

The bodies on all three models are very similar in lines, the wide flare at the back of the tonneau having been eliminated, thus permitting a comparatively low-hung body slung between the wheels. Touring bodies are arranged for the accommodation of six passengers, two of whom are carried on pivoting seats in the tonneau. When not in use, the seats fold back out of the way.

For the present, the "25" model is supplied only in touring car form; the "35" and the "six" are supplied with all bodies—touring car, coupe, Sedan and limousine. In either case the list price includes complete equipment, the list being as follows: Ventilating windshield, electric horn under the engine hood, top with envelope and patented removable side curtains, demountable rims, extra rim, the usual complement of



LEFT SIDE "35" MOTOR

lamps, tools, spare parts, tire repair kit and jack.

In touring car form, the "25" lists at $885, the "35" at $1,290 and the "six" at $1,550. The "35" coupe and Sedan sell for $1,850 and $2,050, respectively, and the "six" limousine lists at $2,500. Prices of the older "20" and "30" remain $800 and $1,190, respectively.

Calendar that Serves Double Purposes.

Each year the National Acme Mfg. Co., of Cleveland, O., issues a calendar which serves the usual double purpose of keeping tabs on the flight of time and pointing out the advantages of the company's products—automatic machines for making screws and other threaded articles, as well as other turned and milled work, and the calendar itself is both substantial and imposing. Each month's "dates" are printed on a separate sheet, and at the end of the month the sheet, instead of being thrown away, can be mailed to the company and the sender will receive in return his choice of a number of books on screw machines and their work. The sheets are contained in a large and substantial holder of handsome design.

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REILLY ADVOCATES THE EDUCATING OF SALESMEN

Explains to the Sales Manager How the Mediocre Salesman With a Little Help Could Become Much More Efficient—Declares Reform in Methods Might Make Big Increase in Sales

"Don't sit de beer on dat sidt, sit it on dis sidt!" commanded the Teuton proprietor of the little road house where Reilly and the Sales Manager had stopped for lunch, and as he said it in his sputtering, nervous way he lifted both steins which the waiter had placed at the left hand of each diner and deposited them at the opposite side of each layout of dishes and eating tools. The little waiter, too embarrassed for words, looked on in silence and with malevolence while the portly host explained to his guests.



"DON'T SIT DE BEER ON DAT SIDT, SIT IT ON DIS SIDT !"

"Dese vaiters iss so stupid! All dey tinks uff iss dere pay. It drifes me grazy! I hope you excoose, chentlemen," was his gesticulatory apology. As the waiter was a new man in the house and apparently new at his trade, Reilly dismissed the incident with a wave of his hand. The proprietor steamed away to new fields of disturbance and the humbled waiter plodded kitchenward.

"Absolutely brainless!" commented the Sales Manager.

"Right, as usual," replied Reilly.

"Some people couldn't learn anything in a million years."

"And still you're correct," was the response.

"If I was the boss I'd fire that stupid fellow."

"Whom are you talking about," asked Reilly, "the waiter or the Dutchman?"

"The waiter, of course."

"Then you're wrong, all wrong!" asserted the dealer. "That Dutchman doesn't know much more about running a business and handling waiters than a hog knows about a rapid fire gun."

"Do you mean to say that the waiter didn't deserve a 'call down' under the circumstances?"

"Maybe, and maybe not," responded the little man of aggressive personality, "but I'll wager that if he were properly handled he never would have done what he did. Not that it makes much difference to me where a waiter sets the beer, so long as he brings it; but I suppose that 'right hand control' is important in the Dutchman's estimation."

"Huh!" was the Sales Manager's only comment.

Not Knowing How to Handle Men.

"'Huh' all you like," retorted Reilly. "That Dutchman is just like fifty per cent. —and maybe more—of the men in every business. They don't know how to handle men or how to get the most out of them in the easiest way. If the Dutchman had properly instructed the waiter beforehand and told him just how things should be done don't you suppose the waiter has intelligence enough to understand and do as he's told?"

"Oh, perhaps," was the Sales Manager's flippant reply, as he tipped the cover of his stein. "What of it, anyway?"

"This of it: if you had fewer dealers like the Dutchman you'd sell more cars."

This hit home, and the Sales Manager figuratively pricked up his ears. "How?" he asked.

"It's all a matter of making an efficient staff of men, even if the staff consists of but one man. How many salesmen do you suppose there are in the automobile business, even in your own aggregation of agencies, who would be much better if they were shown how to be better—if they only had someone to point out the proper way to them instead of criticizing or scolding them every time they do something the wrong way.

Boyhood Experiences an Illustration.

"Look back over your own experience; I can see the same thing in mine; so can almost anyone. When I was a small boy I had a job in a grocery store. It was one of the first positions I had after I gave up being in business for myself—as a newsboy. The grocer I worked for was of this Dutchman type; he was fond of finding fault. I used to be janitor, delivery boy, stable hand, errand boy and. among other things, a salesman. I didn't call myself a salesman at that time, but that is what it amounted to.

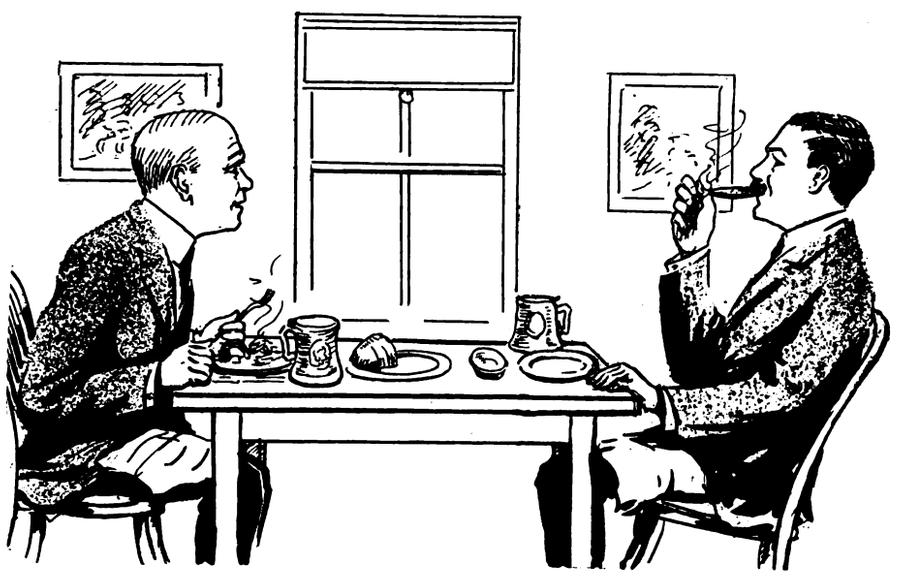
"There were many things I didn't know about the business of selling. In fact, there were more things I didn't know than there were things I did know; but I was anxious

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to learn. The grocer's idea of handling his help was to watch them every minute to see if they made any mistakes, and heaven help them if they did! They got a raking over they didn't forget for a while. Those scoldings were about the only instructions we got. We never knew the right way to do a thing until we had done it the wrong way —sometimes we didn't find out then.

The Boss with the Wrong Attitude.

"I remember one day a woman came into the store after I had been there only a few days and, having come fresh from the street with the newsboys, I said 'Hello, want something?' She wanted something, got it and went out. I didn't want anything, but after she went out I got it, nevertheless. Also, I nearly went out, too. The boss almost flew at me, asked me if I had been brought up in an alley and if I didn't know how to talk to a customer, especially a lady. He stormed around for fifteen minutes, and when I asked him how I ought to address a customer he got worse. Tell me? Not him. He said I ought to know enough to be decent, at least, and that was all the instruction he would give me.



"I WANT THE HIGHEST-PRICED MAN I CAN AFFORD"

Reilly Learns Without Teacher.

"But I was determined, and when another customer came in I watched the boss wait on her. I listened to what he said and got a few pointers that way. After that I watched him closely and, although I used to get in trouble quite frequently, I managed to develop into a fairly good clerk. But if I hadn't had my wits sharpened by a schooling on the street I would have been a long time learning the right way of doing things. However, I learned in time, and when I found a chance for another job I jumped for it. The grocer offered to give me more money if I'd stay, but I didn't like his way of doing business and told him so. It was then only that he spoke well of what I'd done.

Helping Salesmen a Good Investment.

"All the way up from boyhood I've found these same conditions, and they exist today in many places of business. When I got to a point where I employed men I made it one of the first rules of my business that no man under me would have to grope in dark as I had groped or lack a kind word when he deserved it. It applies to automobile salesmen, in one of its most important phases, and the absence of the rule is one reason why so many dealers and factories are not getting all they should out of their salesmen.

"Of course, the salesman I have now was a good one when he came to me, but I actually developed one who, since he left me, is making good in a bigger field in a more important position. He didn't know much about selling when he came to work for me and wasn't as well up as he might have been on automobiles in general and our line in particular. But he was a willing sort of a lad. Without instruction he would have made an average salesman of himself, but I was sure he was capable of better things. I myself had learned a few things and I set out to teach them to him.

Knowledge Withheld is Money Lost.

"I used to talk to him by the hour when there was opportunity and he absorbed information as a sponge does water. Whatever I knew about selling I told him, and I drilled him persistently on the selling points of our cars and I let him read anything and everything that came my way. Do you remember those selling instructions you used to send to dealers? One day when I went over to see your dealer in the next town, and while talking with him, I discovered that he actually kept them locked in his private office, where no one but himself could get at them.

"'Don't you let the salesman see such things?' I asked.

"'I should say not!' he replied. 'I keep those instructions for my own information. If the salesman doesn't know anything about selling let him learn; that's what I'm paying him for. Also, if I start out to teach him he'll be so good in a little while that I'll have to pay him more money. It's money in my pocket, don't you see?'

Public Criticism Another Blunder.

"I didn't see, but I didn't say so. While I was there he took occasion to criticize the salesman for the way a deal had been handled the day before. He was severe about it, too, and right before me. That rubbed the salesman the wrong way, and when his boss wasn't within hearing I overheard the salesman mutter something about 'that damned old fool.' And secretly I agreed with the salesman.

"The salesman that I developed started at rather small pay, because he was a beginner. Had I let him alone he would have gotten to that point of mediocrity that characterizes so many automobile salesmen, and I could have kept his salary quite low. But I don't want a low-priced man working for me; I want a high-priced man, the highest-priced man I can afford. My helping the salesman sent him along fast, and as he became better I kept increasing his salary. By and by he became so good he left me and went to a better position. I didn't blame him or call him an ingrate, because I had gotten all there was in him while he was with me.

Efficiency that Might Result.

"Jim, if you only could get your dealers who have salesmen to do all they can to make the salesmen more efficient, it would work wonders; I believe sales would go up 50 per cent. The system might not be so bad, either, with the salesmen who are connected with the factory. Most salesmen don't get to be their best without help. There are hundreds of average men who could be put several grades higher by a little effort on the boss's part and"——

Reilly's lower jaw and his gesticulating arm stopped simultaneously. The Sales Manager had tipped back and was lighting a cigar; a look at the plates of both showed what the Sales Manager had been doing while Reilly orated.

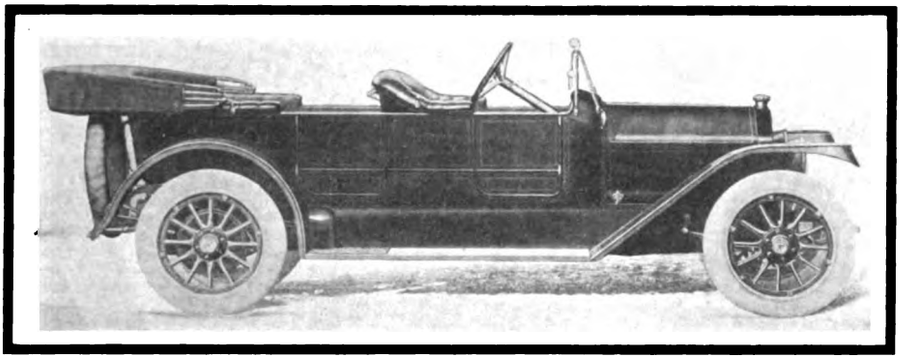
"Gee! Jim, wait for me," he exclaimed; "I'm four laps behind," and the dissertation terminated with a vigorous assault on the mound of sauerkraut and pigs' knuckles.

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SEMI-RACING ROADSTER LATEST NATIONAL MODEL

"Improved Series V" All Electrically Lighted and Started—Same Chassis Continued Practically Unaltered—A Few New Details.

With the addition of a single new body type, the incorporation of electric lighting and motor starting systems and a few minor changes and improvements made with a view to rendering quieter and more comfortable a car already above the average



SIDE VIEW OF IMPROVED SERIES V NATIONAL TOURING CAR

in silence and smoothness of operation and in its provision for the comfort of its occupants, the National line is continued as the "improved series V," the numeral being unchanged and the added adjective applying to the things that have been done to make the car better. The National Motor Vehicle Co., of Indianapolis, Ind., is one of the increasing number of makers holding the opinion that the series system, rather than the yearly model system, is more advantageous to builder and buyer alike.

All the National models, as in the past, are mounted on what is essentially a single chassis; that is to say, all chassis are alike except that in the two-passenger machines the wheelbase is 120 inches and in the touring models the axle-to-axle distance is 128 inches and the frames are heavier. The new model is essentially a speed car; it has the straight, cowlless dash, the low seats and the rakish steering column of a racer and differs from the out-and-out racer only in that the seats are designed and upholstered with a view to real comfort and the finish is up to touring car standards. The other models are a two-passenger roadster, also on a 120-inch wheelbase, a small tonneau car, a five-passenger and a seven-passenger touring car, the last three all having 128-inch wheelbases. There is only one chassis change that does not extend through the entire line, and that is the increase that has been made in the depth of the touring car frames to better resist sagging tendencies.

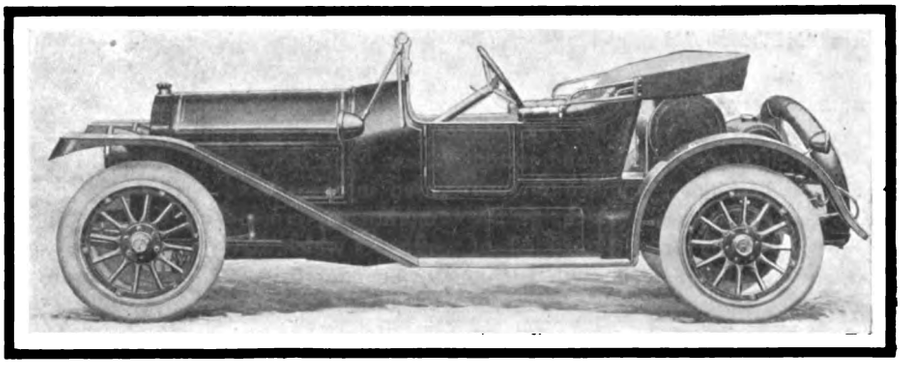
The electric lighting and motor starting system, which is part of the regular equipment of all models, is the Gray & Davis, in which there is a dynamo, driven from the engine, for generating current which is accumulated in a storage battery, and a separate motor for starting the engine, the motor drawing its energy from the storage battery. The dynamo is driven by a silent chain, the driving sprocket being mounted on one of the camshafts near the front of the engine, and is of the constant voltage type and generates at low speed; the regulating system is such that overcharging of the battery is not possible. The engine-starting motor is brought into engagement with the engine by means of a foot-operated plunger, which at the same time throws in the starting switch; the engine is turned over by the motor at the rate of 100 revolutions per minute. There is sufficient power in the electric motor to propel the car in case of emergency. The storage battery is of sufficient capacity to start the motor many times and to carry the lighting load for several hours without recharging; it is placed on the left running-board, at the front.

Of the minor mechanical changes that have been made in the National long-stroke 40-horsepower motor the most important one has to do with the lubrication system, which is of the type in which a constant flow of oil, maintaind by a mechanically driven pump, is forced through the drilled crankshaft, suitable ports permitting the lubricant to flow out at the various bearings. Heretofore the overflow, collecting in the bottom of the crankcase and being thrown about by the lower ends of the connecting rods, has been depended upon to provide lubrication for the cylinders. In the new series, however, positive pressure feeds have been provided for the cylinders, the same pump serving to supply all the feeds. A slight increase in the power output of the motor, as well as quieter running, have been secured by the employment of cams the contours of which have been improved; the cam shafts have been increased in diameter and run in larger bearings than formerly. The spiral timing gears have been made quieter, and the pistons have shared in the refining process. The method of attaching the water circulating pump to the engine has been simplified, and its removal is now an easy matter. The radiator fan has been re-designed and, as a result, is more efficient.

The tire pump, which is built into the front of the crankcase, is now operated by a positive type of clutch, in place of the cone clutch that formed the connecting link in previous models. The air-pump for creating pressure on the gasolene is of new design and has been placed more conveniently than before.

Rattle has been eliminated from the steering gear by the introduction of a spring device which takes up any shake that might cause noise. Hardened steel bushings have been put into a number of places where it is desirable that there should be high resistance to wear and also easy repalcement when excessive wear has occurred. The efficiency of the brakes has been slightly improved; drive from the live axle shafts to the hubs of the rear wheels is through enlarged dog clutches; and room has been found for a little improvement in the springs, the object sought being the prevention of all tendency to permanent set.

Needless to say, the National car retains the left-side steer and center control that its makers so strongly advocated; the control



IMPROVED SERIES V NATIONAL ROADSTER SHOWING STRAIGHT LINE EFFECT

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system is absolutely unchanged. In the matter of bodies, the roadster has had its sides lowered a trifle; the touring cars have been given a more accentuated curve at the backs of the seats; the boxes on the dashboard have been put a little higher; and the lamps have been sunk in the dashboard. In the touring models the space under the front seats has been arranged to contain a small trunk, and access is obtained from the rear, so that extremely useful storage space is provided for touring. Protection against spattering mud and water has been made ample by the widening of the mudguard flanges. The tool box is hung under the chassis and is reached through an opening in the guard extending from the inner edge of the running-board to the body; a neat door covers the opening. Improved tire irons for carrying two tires are paced in the rear. Add a slight enlargement of the general dimensions of the touring car bodies, and the list of changes is complete.

The price list has undergone some revision and the figures have made an upward movement. The semi-racing roadster is listed at $2,750, which formerly was the price of the regular roadster, that machine having been increased to $3,150. The small tonneau car, the old price of which was $2,900, now is priced at $3,300, and the same figures apply to the five-passenger touring car. The seven-passenger touring car, the price of which was $3,000, now costs $3,400. These prices include regular equipment in all cases.

Advocates "Mill Ends" Instead of Waste.

Everyone who ever has wiped off a piece of machinery knows how hard it is to find a clean "corner" on a dirty rag, and likewise how dirty are the rags and cotton waste which ordinarily are supplied for such service. "New mill ends," which, as the term implies, are the ends clipped off of bolts of cotton goods at the mills, it is claimed are not only more satisfactory for the purpose than either old rags or waste, but are more sanitary and cheaper in the long run, for being perfectly flat and of light and even weight they "go farther." Their use for automobile work is being exploited by the American Mill Ends Co., of Detroit, Mich., which supplies the "ends" in 50 and 100-pound bales.

Temperature Names and Their Equivalents.

The color designated as dull cherry red in the manufacture or preparing of tools and tool steel corresponds to a temperature of 800 degrees Fahr. Light straw corresponds to the lowest temperature given a name—222 degrees Fahr.—and yellow-white to the highest temperature—1,300 degrees Fahr.

SIX-WHEELED OMNIBUS FOR TWENTY FOUR PASSENGERS

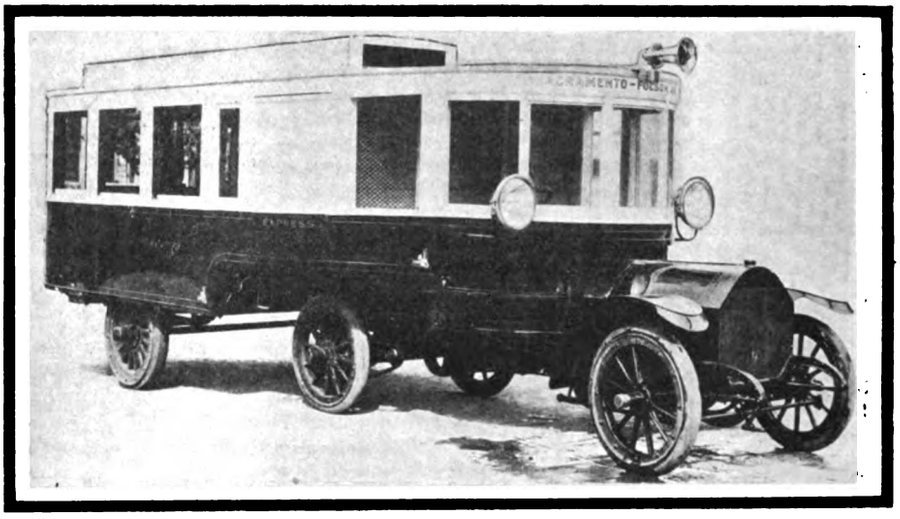
Ingenious Tractor-Trailer Idea of a California Dealer that Works Well —New Lease of Life for Pleasure Chassis.

As an aid in solving passenger transport problems, the motor omnibus is perhaps a little better understood and certainly more generally used abroad than it is in America, though the movement in favor of such vehicles gradually is spreading, and from an almost insignificant beginning at length has reached proportions and made possible results which are worthy of attention. In a great proportion of the cases outside of New York City where motor 'buses are used in the United States, they are what might be termed "made-over" vehicles—vehicles which, having served a useful term doing one sort of work, have been partly, or wholly, reconstructed and placed in new duty—and of them it is doubtful if there is any which is more ingenious and, incidentally, more efficient and dependable than the six-wheeled hybrid shown by the accompanying illustration.

The 'bus is principally a 1906 Locomobile pleasure car chassis—it already had been driven some 120,000 miles—partly reconstructed and made to do duty in its new service by its owners, A. Meister & Sons Co., who are the Sacramento, Cal., representatives of the Locomobile Co. of America. It operates on what has been styled the Sacramento-Folsom Air Line and makes two trips a day—about 90 miles—at an average speed of 20 miles an hour between the two California cities for which the line is named. The total weight is 6,000 pounds.

In the design of the 'bus, beauty of outline scarcely is its dominating feature, though it is none the less useful and efficient for its somewhat outre appearance. The stage portion of the vehicle, designed by its owners, is a massive structure mounted in the rear on an extra pair of rubber-shod wheels and in the front on the center of the Locomobile chassis. A modification of the "fifth wheel" idea permits the necessary flexibility between the two portions. The passenger carrying end of the 'bus is tastefully upholstered in leather and affords accommodation for 24 persons. In addition, there is liberal space for the carrying of the passenger's baggage and a limited amount of express matter.

During the time the 'bus has been in operation, it has not missed a trip and has proven a popular addition to the transportation facilities between Sacramento and Folsom. That the bus is comfortable is evidenced by the fact that it is cutting in, even if ever so slightly, on the railroad traffic between these cities. One feature which tends to increase its popularity is the fact that its time of arrival and departure from Sacramento are such that theater parties may be taken in and home again the same evening. A complete electric lighting system serves to illuminate the roads and the 'bus after nightfall.



LOCOMOBILE 'BUS WHICH OPERATES ON SACRAMENTO-FOLSOM AIR LINE

Heating Due to Deformed Fan Blades.

If a motor persists in running hot, and search in other directions does not serve to disclose the cause of the malady, it is well to inspect the blades of the fan and see that they have not been flattened or otherwise bent out of shape. With a pressed steel fan revolving at a high rate of speed, it does not take a very hard blow to deform the blades and lessen the efficiency of the device.

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CONCENTRATION ON ONE LINE A SALES BUILDER

Dealer of Six Years' Experience Gives Striking Reasons Why Energies Were Centered on a Single Factory's Product—Modern Methods and "Still Hunt" are Other Points in Sales Plan

In these days of system and systematizing, when the automobile factory sales department that has not a method of teaching its dealers how to secure prospects and to follow them up is viewed askance by its fellows, there probably are few dealers who have not had brought to their attention a method of helping increase their sales profits; and while many of these men in the field have adopted the various systems with profit—for no system at all really is ruinous—a few have worked out selling and prospect-hunting plans of their own.

Secrets of Success That Are Plain.

In which connection the methods of the Central Motor Car Co., of Bloomfield, N. J., safely may be said to be entitled to unusually respectful consideration and, contrary to being unwilling that their fellows in the trade should learn the secret, Ernest H. Cadmus and Charles W. Smith, who virtually constitute the concern, are only too pleased to spread their selling scheme broadcast. That this is effective is evidenced by the company's prosperity.

Summarized, the selling system centers about three principal points: Concentrate on one line; "still hunt" your prospects and be square with the public. The line is the Regal; the prospects are numerous. Next year, the calendar year of 1913, the company expects to dispose of 80 cars.

When a Motor World man dropped into the company's concrete home at Washington and Farrand streets, Smith was out on one of these "still hunts" and Cadmus was in charge.

Wherein Concentrated Effort Pays.

In past years the company has represented several lines of cars, carrying the entire number at one time; at the beginning of the present year all but the Regal were dropped. Asked why a single line was preferable, Cadmus was specific.

"There are several reasons," he replied. "One is that with one line we can secure larger territory. We now have the counties of Essex, Morris and Passaic. This gives us an ample field in which to work and place sub-dealers and sell a larger number of cars in a season. Therefore we get a larger commission. It will mean a 5 per cent. better commission this year than last. If we sell 80 cars, as we expect to do, it will mean $2,500 in money, and that is worth picking up. We have been selling Regals for five years, and this enlarged territory will bring us a better commission in parts. The increased percentage here ought to be about $1,000, so you see that by sticking to the one line and selling a lot of it our increased revenue will amount to approximately $3,500.

Confusion Engendered by Variety.

"There is another reason one line is better than several. We are able to concentrate our energies. The Regal line is well adapted for concentration because of its diversity of models. We can give a man any kind of a car he desires at quite a broad range of price. We can hammer harder on one line than we can on two or three. We make a more thorough study of it and really are better salesmen because of it. When we exploited several different makes it was not so easy for a buyer to make a selection; he had too much to choose from. Now if he is not determined not to buy a Regal we generally can sell him one."

Home-Made Investigating Method.

Cadmus smiled when he was asked what methods were employed in looking up prospects.

"Well," he said, "I guess we are somewhat different from most dealers." He hesitated a moment, as if to find a name for the system, and then added: "I think we could almost call it a 'still hunt' method. We didn't get it from anyone; we just worked it up ourselves."

"How does it work? What is the scheme?" asked the questioner.

How a "Still Hunt" Is Conducted.

"Well, I'll explain," replied Cadmus, his big, forceful personality backing up his opinion at every stage, "but first it is necessary to understand how prospects generally are handled. As a rule when it becomes noised around that man is in the market for a car he is besieged by dealers. First one is after him, then another; they call on him and phone him and they all so shower him with printed matter and personal arguments that the poor man becomes confused, he doesn't know what to buy, and often he winds up by postponing his purchase or by not buying at all.

"One thing we never do is to drive up and stop our demonstrating car in front of a man's house. That is an almost certain signal for the rush to begin. If some other dealer doesn't see your car with the manufacturer's tag at the prospect's door someone else sees it and the news travels fast. Neither do we make a practice of getting into this rush when we hear that some other dealer has been to see a man. We get far more results by our 'still hunting.'

No "Front-Door" Demonstrations.

"Our leads to prospects generally are secured through friends and owners of cars we have sold. When we hear in this way that someone is in the market we beat around the bush and get our bearings. Then, instead of driving up to the man's house and giving the news a chance to travel, as it will in a small town, we arrange otherwise. We plan to give the prospect a demonstration without attracting attention. We have him come to the garage or arrange to give him a demonstration in such a manner as not to attract attention to the fact that he is a prospective buyer.

"Men are more pleased with such arrangements than they would be to have themselves almost publicly paraded and to bring down on them a regiment of dealers. And in this way we are able to show up the points of our cars without there being a half dozen or so of other cars in the prospect's mind. If such a man has any intention of buying a car we generally can sell him one. What's that? You ask if he may not afterwards get 'sore' when he finds he would rather have bought some other car? Hardly. One of our greatest assets is our satisfied owners. We do everything in our power to keep them satisfied. We believe in playing fair. My father was in this town before me and his father before him, and when I can't keep up the family reputation for square dealing I'll quit."

The Part That Service Plays.

Cadmus means what he says. Service—that abused term—is a vital part of the company's policy. Owners feel at liberty to drive into the garage and ask to have

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their cars looked over. If it is a matter of adjustments merely or insignificant repairs there is no charge; if, however, anything wrong is discovered the owner is glad to pay. The company's reputation—for it really is not a myth—assures him that if he is asked to pay there is a legitimate reason. And the concentration on one line helps out in the service. When a car comes in, the workmen, by being thoroughly familiar with the one line, know just where to look to ascertain the car's condition and are quick to remedy irregularities. It is specialization, that keynote in present day efficiency theories.

Emphasizes Company's Reputation.

One point that is hammered home by Cadmus and Smith is the advantage of buying of a reliable man in the buyer's home town. Then if anything goes wrong with the purchase it is up to the dealer to make it right and adjust any differences with the factory, whereas if the purchase is made through a distant dealer there often is greater difficulty in adjusting matters. The company's reputation, built up through a course of some six or seven years, is made much of.

On the used car proposition the safe and sane business way is followed. No more is allowed for a car than can be secured for it at resale, and this traded-in stock is turned over quickly.

"A man came to me one day," said Cadmus, "and wanted to trade in his car. I offered him $400. He said another dealer had offered him $700. He gave me his name —he was a dealer who handled a $2,000 car —and I showed the prospect how the other dealer, by cutting his commission, could make this price, while we, with a smaller commission, so far as dollars are concerned, could not do so. He saw the point.

When Commission Cutting Paid.

"As to throwing away commissions in trading just to make a sale, we don't often do it. We did it once, but there was a real reason for it. Smith and I had quite an argument about it at first, but we finally agreed that it was the best thing to do. The man who wanted to trade for a good price wanted so much that we would make practically nothing if we traded. But this man, who was very insistent, was quite close to another man to whom we wanted to sell a car. We traded, and in that way this man influenced the other and we made the profit on the second sale. Otherwise we would have made no sale at all. As it is, we have both men for customers in supplies and so forth and we considered it the best way out of a perplexing situation. The man on whose car we made the regular profit is a physician and we looked upon him as more or less of an advertisement for our line, as he is all over town and gives a car a chance to show what it is made of. And if we keep him satisfied—which we will—he can help us a lot."

The parts and supplies trade is thriving with the Central Motor Car Co. The regular stock is valued at about $3,000. Last year the company sold over $12,000 worth of tires and in January, 1911, the sales of one brand exceeded $1,200, and January is considered a dull month in tires. Gasolene is bought at 15½ cents and sold at 20. The monthly sales are about 3,500 gallons, but the dealers say there is little money made in this commodity.

Storage Conditions That Prevail.

Storage is quite a heavy part of the business, and although the building, which is but one story, is only 45 feet wide at the front, 70 at the back and 100 feet deep, 30 cars can be stored. The average number is 22—all live storage. Prices range from $10 and $15 for small models to $25 and $30 as top prices. The cleaning and attention required in large cities is not demanded in Bloomfield; cars which are in and out frequently are cleaned only when cleaning is required.

The location of the garage is advantageous. At present the street is somewhat torn up, but when the authorities have finished the improvements that are now under way the garage will stand on an advantageous corner of a spacious square. The street is heavily traveled and the garage is but a few feet from the D., L. & W. station. Demonstrating expenses are kept down by concentrating on one line, as but one car is required where otherwise one would be required for each of the different lines carried.

Pleasing the Trade a Principle.

Pleasing both the transient and the regular customer is a business principle. Two toilet and wash rooms are kept scrupulously clean, and always there is soap and clean towels, and the tourist who drives in for storage is pleased to find a place where he can in comfort remove the dust and grime of travel. Cadmus well expressed the company's attitude when he said: "We do not believe in getting a man's money and then saying 'To hell with him!' We are in this town to stay and are going to stay; and we have the future to look out for. The only way we can do it is by building a reputation for reliability and fairness and by gathering around us a satisfied trade."

Combine to "Solve" Petrol Question.

Unless a hitch of some sort develops, it is promised that British motorists soon will be able to obtain their "petrol," which is the British designation for plain gasolene, at a tithe of what it costs at present. In order to bring about this desirable state of affairs a company to be styled Motor Owners' Petrol Combine, Ltd., which is to be modestly capitalized at not less than $5,700,000, already is in process of formation, headquarters having been established at Egyptian House, Picadilly, London, W., England.

The idea, of course, is to permit those who participate in the stock distribution of the "combine" to purchase their fuel from themselves, so to speak, at prices set by themselves, and in order to accomplish this end it is proposed to own oil fields as well as ships, refineries, storage plants, rolling stock and distribution plants in all of the principal cities in the country, which is a tall order for motor owners in Great Britain or any other country.

Treatment for Over-Size Piston Rings.

It is not always possible to obtain a set of new piston rings that can be inserted in the piston grooves without any fitting, though very often this may be done. Sometimes the rings are a trifle tight in the grooves. When this is the case the proper thing to do, assuming, of course, that the tightness is not due to dirt or carbon in the grooves, is to ease the rings by rubbing their sides on a sheet of fine emery cloth laid on a perfectly flat surface, such as a sheet of plate glass or an accurately planed block of wood. The rings should be constantly turned while rubbing to prevent the removal of too much stock in any one place. The utmost care sholud be taken to wash off all traces of emery before putting the rings in place. There should be no trace of looseness or of binding in a properly fitting piston ring.

Flame Test for Carburetter Floats.

An invisible leak in a carburetter float of the hollow metal type can be found by heating the float sufficiently to expand and vaporize the gasolene that has leaked in, but not sufficiently to melt the solder, if any is used. A lighted match run around the float will ignite the vapor issuing from the microscopic hole. If the float is immersed in boiling water for a few seconds the gasolene will expand sufficiently for the purpose.

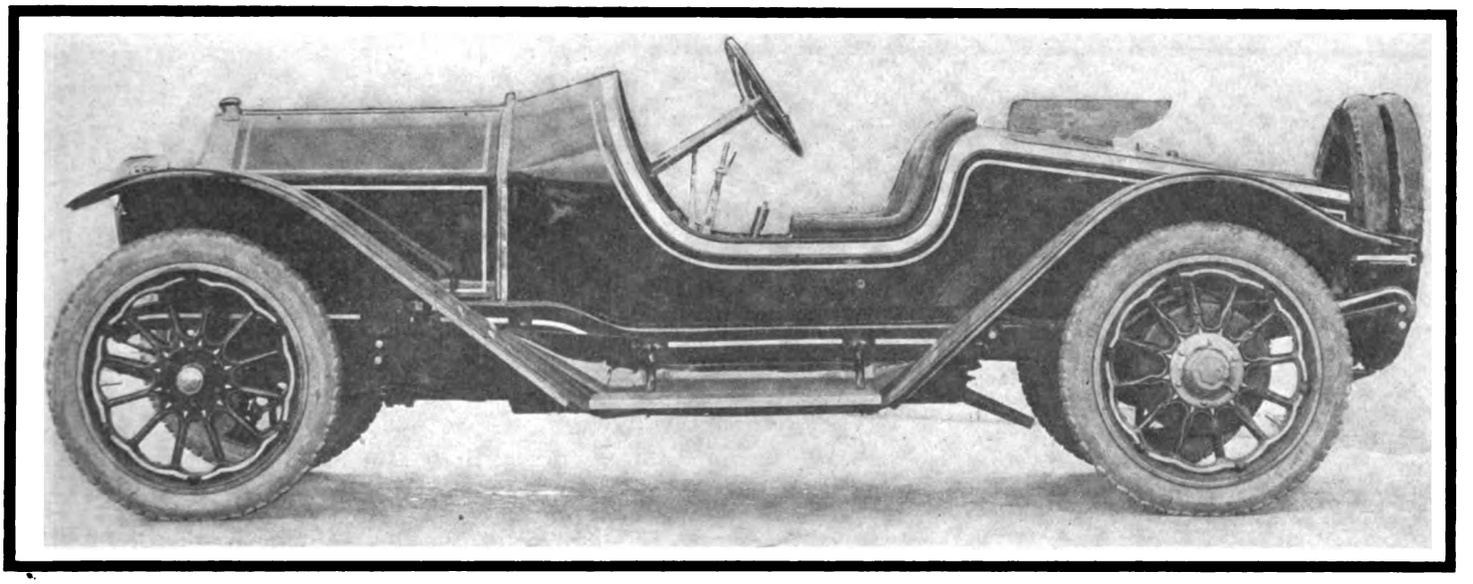
Old Corks as Spare Valve Protectors.

A simple method of ensuring the good condition of spare valves is to punch a hole in a large cork and run the valve stem through the hole so that the cork abuts against the valve head. The cork may be held in place with the aid of a spare valve spring, washer and pin. Wood will serve the purpose if no cork is available.

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TWO NEW MODELS IN THE PATHFINDER LINE

One is a "Martha Washington" Coach for Three and the Other a Two-Passenger "Cruiser" With Flowing Lines—Electric Lighting and Starting System Adopted—Few Alterations Found Necessary



PATHFINDER "CRUISER" MODEL—A LOW HUNG ROADSTER WITH A "MIDSHIP COCKPIT"

Although two new models have been added to the Pathfinder line made by the Motor Car Mfg. Co. of Indianapolis, Ind., the same chassis is employed for all, the newcomers increasing the body styles from four to six. Two additions are a Martha Washington coach, a three-passenger, inside driven car, and the "Cruiser," a two-passenger vehicle, on which the option of either wire or wood wheels is offered. Prices range from $1,875 to $2,500.

The power plant is a Continental block motor with the valves all on the same side; its bore and stroke are 4⅛ inches and 5¼ inches, respectively, and it develops better than 42 horsepower at 1,300 revolutions a minute. The crankshaft is of the three-bearing type with well-proportioned liberal size bearing surfaces.

The crankcase is made of nickel aluminum alloy and is of the two piece type with the oil reservoir, easily removable, contained in the lower half; a patented breather pipe conveniently located on the upper half of the case serves as a filler pipe in addition to relieving the crankcase pressure. The remainder of the lubrication system consists of two plunger pumps and suitable piping to lead the oil to the bearings. One of the pumps forces oil directly to the main crankshaft bearings, whence it drains into compartments under the connecting rods and is splashed over the cylinder walls and auxiliary bearings, and the other forces oil over the timing gear train in the front of the crankcase. The overflow is strained into the oil reservoir and re-pumped over its rounds. A sight feed on the dash serves to indicate the operativeness of the pumps.

By way of ensuring quietness of operation, the timing gears are helically cut and the valve mechanism is completely enclosed by means of light removable covers held in place by means of thumb nuts. Cooling is effected on the thermo-siphon system, radiation being assisted by an 18-inch ball-bearing mounted fan; the radiator is of the honey-comb type. "Mixture" is furnished by the latest type Schebler carburetter and the motor is sparked by an Eisemann high tension magneto with the plug leads carried in a special aluminum housing effectually protecting them from breakage or short circuits.

The pistons are cast of a special grade of reverberatory air furnace iron and are extra long and accurately ground to size. Each is fitted with four diagonally split eccentric expansion rings which have been treated in special machinery designed to relieve casting strains and ensure even pressure all the way around the cylinder walls. Five oil grooves are turned in the outside of the pistons to assist in distributing the lubricating oil in an even film. All pistons and connecting rod assemblies are carefully weighed and balanced to minimize vibration. Wrist pins are formed of seamless cold-drawn steel tubing carbonized and accurately ground to size; they are pinched in the small ends of the connecting rods, bearings being in the piston bosses. Connecting rods are of I-beam section and are made of carbon steel drop forged and heat treated with the bearing caps held in place by means of nickel bolts securely locked.

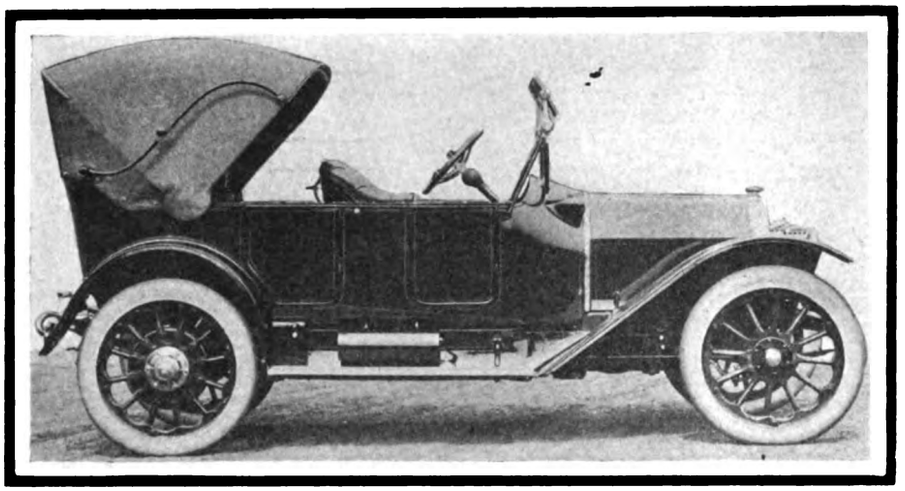
The crankshaft, camshaft and connecting rod bearings are unusually liberal in size and are made of high grade nickel babbitt metal. Connecting rod big end bearings are held in place by means of brass retaining screws. Indicative of the care which enters into manufacture, all bearings after having been carefully fitted into place are expanded on special expansion arbors, reamed and hand scraped.

Distinctive of the Gray & Davis electric lighting and engine starting system, which is the regular equipment on the Martha Washington model only, and which operates at a nominal 6-volt pressure, the generator for charging the storage battery and the engine starting motor are separate units. The former is mounted on a bracket on the crankcase and the latter is hung to the chassis frame and drives the engine through the intermediary of gearing cut in the periphery of the flywheel. Pressure on a pedal serves to engage the electric motor through the gearing and at the same time

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closes the circuit, causing the engine to be "turned over" at the rate of 80 revolutions a minute. Immediately the engines takes up its own cycle of operations, the electric motor automatically is disengaged and the generator commences to charge the storage battery against its future use for lighting and starting. The whole series of operations is entirely automatic.

From the engine, power is transmitted to full-floating rear axles through a leather faced cone clutch provided with spring inserts, to ensure smooth action and positive release, and a three-speed selectively operated change gearset. The clutch and the gearset are contained in the same aluminum housing, which, in turn, is securely bolted to the flywheel case, making of the whole a rigid unit in which disalignment of the several shafts is impossible. Both service and emergency brakes are located on rear wheel drums and both are internal expanding and carefully equalized. The service brake drums are 16 inches in diameter and the others are 12 inches in diameter.



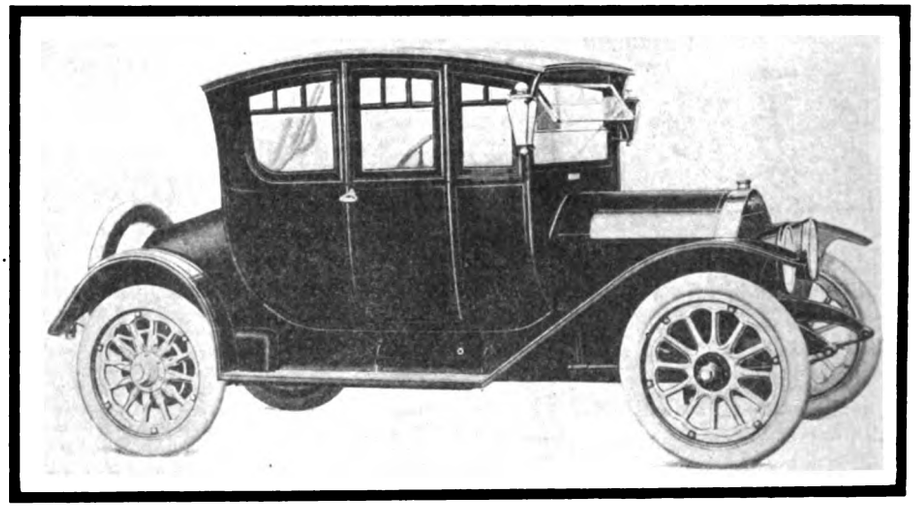
STANDARD PATHFINDER TOURING CAR FITTED WITH VICTORIA TOP

In the transmission elements, a torsion tube surrounding the propeller shaft takes the place of both torque rods and radius members. The torsion tube is attached to a cross member of the chassis frame by means of a swivelling yoke. The rear axle housing is formed of pressed steel and is unusually rugged in construction. A large inspection plate permits ready access to the differential gears, which may be adjusted without the necessity for removing them or disturbing other parts.

The wheelbase of the chassis has been increased to 120 inches and, as heretofore, the unusual type of "chariot" wheels, which are an exclusive feature of Pathfinder cars, are retained. On all models except the "Cruiser," which is equipped with 34 x 4 inches tires mounted on either wood or wire wheels, at the option of the purchaser, tire sizes are the same—namely, 36 x 4½, both front and rear; demountable rims are standard equipment. Both the front and the rear of the chassis are supported on semi-elliptic springs. Spring shackles are provided with grease cups and every effort has been made to reduce to the minimum the possibility of unwelcome rattles and squeaks.

In the body designs, care has been taken to obtain consistency of lines and to eliminate corners and crevices and "gable end" projections. To the "Cruiser" model, the new two-passenger car of unusual perspective, an even more unusual appearance is lent by the addition of a plate over the rear compartment bearing the name of the car and of the model. The lines of the "Cruiser" are quite in keeping with its nautical designation; they are rather long, without sharp angles, and the "midship cockpit" is distinctly suggestive of the cruising power boat.

The other machines in the Pathfinder line include a standard five-passenger touring car, an "armored" roadster, a four-passenger phaeton and a delivery wagon of 1,500 pounds rated capacity. In all the pleasure car models—the delivery wagon is built on the pleasure car chassis—the upholstery is hand buffed leather over curled hair and measures 10 inches in thickness.



PATHFINDER "MARTHA WASHINGTON COACH" WHICH ACCOMMODATES THREE

Nickeling Solutions to be Avoided.

One of the showiest and most profitable of the many catch-pennies sold by street fakers used to be a solution of mercury and acid, which possesses the property of producing a bright finish, resembling nickel, on brass or copper, merely by applying the fluid with a rag. Unfortunately, the mercury, which forms the bright film, evaporates in a few hours. The effects of the acid, however, are likely to remain, and in some instances real damage can be done through corrosion.

The fleeting character of the "plating" produced in this way has become so well known that the stuff is hard to sell in the street, but there are indications that the "plating solution industry" has been quickened somewhat by the opportunities to sell the stuff to people who find the plating wearing off the bright parts of their cars or who desire to make the cars appear up to date by "nickeling" the brass trimmings. Polishes warranted to act like lightning and which are made of strong acids that actually eat away the metal are also in the category of things which should be given the widest kind of berth, out of consideration for the nickel plating. There are plenty of really good polishes on the market, and there are also plating compounds that really plate There is no difficulty in obtaining the former, and the latter, though limited in their usefulness, are satisfactory enough as far as they go.

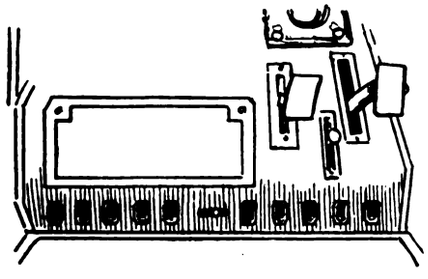
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PROFITS THAT COME WITH THE WINDS OF WINTER

Although Few Dealers Make the Most of Them, Automobile Heaters Offer a Fertile Field for Endeavor and Provide a Source of Revenue—Devices That Are Available and Their Methods of Operation

While it is self-evident that a warm car is very much more comfortable than a cold car during the winter months, there are few dealers who avail themselves of the opportunities offered by the several available devices which afford such comfort. Properly displayed and properly exploited, there is not the slightest doubt but that the sale of heaters could be made to realize not an inconsiderable revenue.

As for the cars as they come from the factory, in only one instance is provision made for heating the car. The exception is the Oldsmobile Defender, in which advantage is taken of the heated air which comes from the radiator and from under the motor hood. The Oldsmobile heater comprises a series of openings in the base of the dash which are provided with shutters so

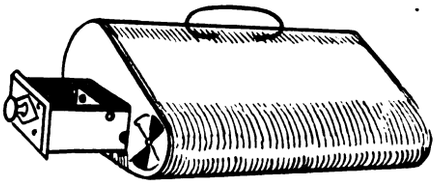


OLDSMOBILE FOOT WARMER

that they can be closed when heat is not desired. A baffle plate is employed so that grease cannot be thrown through the heater holes from the revolving parts of the motor.

Advantage also is taken of the heated air from the engine in the Reynolds heater, which is designed for attachment to any car simply by cutting a hole in the footboard for the reception of the casing. As shown in the accompanying illustration, it consists simply of a grating which is fitted into the footboard so that the air which is drawn in through the passages in the radiator and which of necessity becomes heated to a degree which is dependent upon the efficiency of the radiator, is admitted to the body. Baffle plates are provided to prevent oil and grease thrown by the revolving parts of the motor from passing through the grating and soiling the interior of the car, and adjustable shutters also are provided by means of which the amount of heated air admitted to the compartment may be varied or shut off entirely, if need be. Heaters of this type, however, can only be placed on the footboard, and therefore are only applicable for heating the forward compartment of the car.

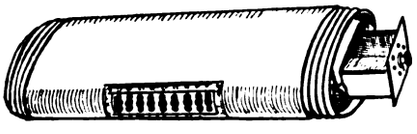
Probably the simplest method of render-



LEHMAN COAL HEATER

ing the tonneau comfortable, and one which involves no change in the mechanism or the body of the car is offered by the use of the familiar coal burning coach heater. As ordinarily constructed, this device consists of a small sheet iron casing which is provided with a drawer. The interior of the casing is lined with asbestos or with other suitable fireproof material; ventilating holes are provided at either end for the escape of the heat, and in some cases holes also are provided in the top or on one side for the same purpose. The fuel consists of a specially prepared brickette, which is ignited by placing it in a brisk fire until it glows, and which then is placed in the drawer, where it slowly burns and throws off considerable heat.

Of this type of heater, probably none is better known than the Clark heater, product of the Chicago Flexible Shaft Co., Chicago, Ill., and which is shown in one of the illustrations. The device is made of heavy



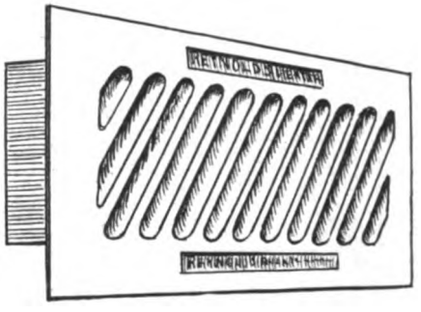
CLARK FOOT WARMER

sheet metal and all of the exposed parts are heavily nickel plated; the body of the device is covered with either plush or Brussels carpet, as the case may be. By way of regulating the amount of heat which is radiated by the device, adjustable shutters are provided to cover or partially cover the ventilator holes.

The fuel which is provided is specially prepared, so that while combustion actually takes place the chemicals which are mixed with the carbon or coal in the brickette account for the gas which naturally is emitted during the course of combustion and also help to raise the temperature and render the combustion slower and deliberate. One brickette, it is claimed, will burn 12 to 16 hours.

As made by Lehman Bros., of New York City, the coal burning heater has much the same characteristics. As with the Clark device, the fuel is contained in a drawer and the heat emitted escapes through adjustable ventilators provided in the end pieces and sides. Several different styles are manufactured and different finishes provided to meet varying requirements.

While heaters of this type are eminently satisfactory considered from the standpoint



REYNOLD'S FOOT-BOARD HEATER

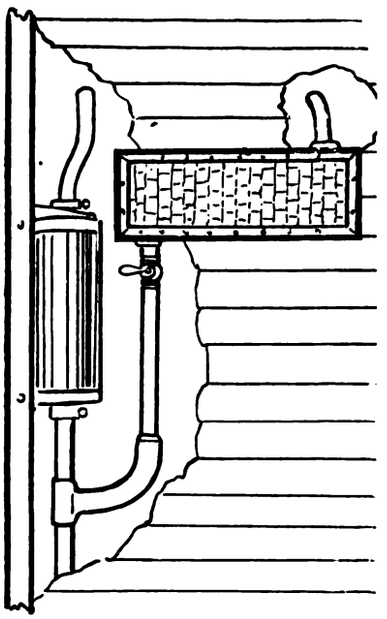
of their ability to make the car comfortable, they have two drawbacks in the shape of the expense for fuel, which, however, does not amount to a great deal, and the necessity for the use of a fire for ignition of the fuel, which spells both time and trouble.

The fact that the better part of the heat units which are available from the gasolene which is used to operate the motor is represented as a waste through the engine cooling jackets and the exhaust, naturally suggests that the heat which is dispersed through these be used to render winter riding comfortable, and indeed in not a few of the heaters on the market, the heat of the exhaust is used directly.

On first thought, the possibility of using the heated water which comes from the cylinder jackets would suggest itself as a good medium for carrying the heat to the car, but the fact that this would necessitate further complication of a system which is a vital part of the operating mechanism, militates against the practice.

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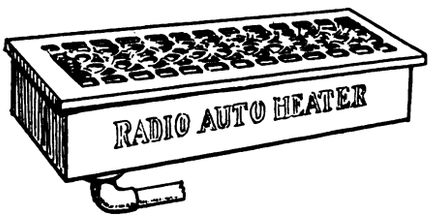
Probably the type of heater which is in most general use is the one wherein the heat of the exhaust gases is used, the gases or part of the gases being intercepted before they reach the muffler and caused to pass through a radiator positioned in the body. The heater made by the Motor and Manufacturing Works Co., of Dunkirk, N. Y., is of this type. The radiator itself is made of cast iron in the shape of a coil, so that surface sufficient to radiate ample heat is obtained. The device is positioned in the floor boards of the car and is covered with a grating. Connection is made to the exhaust pipe by means of a three-way valve, which clamps to the pipe, and a length of flexible metallic pipe which leads to the radiator and makes pipe fitting unnecessary. By closing a shutter which is operated by means of a milled sector, not only is the heat prevented from emerging through the radiator at times when it is not required, but the cut-off valve is operated so that the exhaust passes through the muffler in the ordinary way. Flexible metallic piping also figures in the equipment which accompanies the Al-Ton Heater, which is made in Philadelphia by the Atlas Ball Co. The exhaust gases are similarly used.



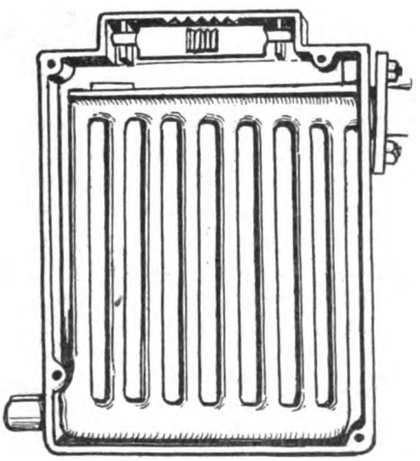
GARRISON HOT-AIR ATTACHMENT

Similar practice is exhibited in the manufacture of the American heater, which is produced by the American Auto-Heater Co., of Buffalo, N. Y. The perforated plate and all of the fittings are made of aluminum by way of reducing the weight to a minimum. The heating coil is attached to the exhaust pipe through the intermediary of a "T" fitting, which is provided with a shut-off valve so that the radiator can be rendered inoperative, and regulation pipe fittings, the make-up being accomplished by means of a union. The gases which pass through the radiator are muffled by means of a smaller muffler, by way of preventing noise.

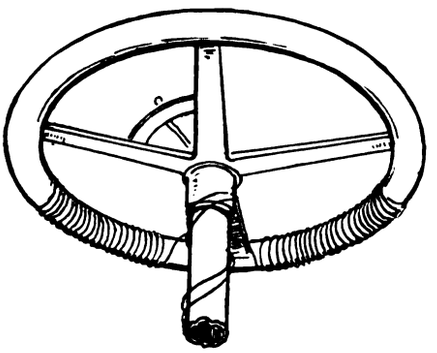
The Radio heater consists of a cast iron pot enclosed in a steel casing, and covered with the orthodox perforted plate. Attachment to the exhaust pipe is by means of special fittings which are supplied with the device and which include a valve for regulation. The device is made by the Milwaukee Auto Specialty Co., Milwaukee, Wis. The Garrison Gasolene Specialties Co., Philadelphia, Pa., also produces a heater of much the same character. A special three-way valve and special slip joint fittings which are supplied with the device reduce the labor involved in the attachment of the heater to a minimum.



RADIO EXHAUST HEATER

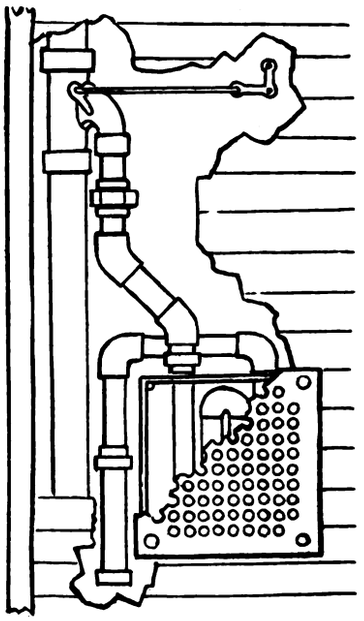


AUTO HEATER COILS



WARM HAND WHEEL

While either of these types of heaters is applicable for use with either the open or closed types of bodies, where the former is used the heat is practically ineffective in keeping the driver's hands at a point near the normal temperature. Not many devices are on the market which provide means for preventing cold fingers, however; probably the best known is the Warm Hand wheel made by the Warm Hand Steering Wheel Co., of New York City. The device is simple in the extreme. It embraces the use of a wheel, the two lower sections of which are provided with special resistance coils so that attachment of the leads to the ordinary storage battery results in the heating of the coils, and consequently the production of a warm wheel rim. So high is the resistance that but little current is used even when the device is operated for long periods. A switch provides the means for rendering the device inoperative when the car is not in operation or when heat is not needed.



AMERICAN COIL HEATER

The electric heater for warming the body of the car also is in course of development at the hands of the American Electrical Heater Co., Detroit, Mich., but as yet the device has not been placed on the market. Naturally a device of this type will offer many advantages because of the ease with which it can be attached and detached.

When all is said and done, with the heating devices which are now on the market, and a windshield to protect one from the cold blasts which are prevalent, driving during the winter months even in an open car can be made fairly comfortable, while the advantages offered by the closed types of bodies make winter driving in the cold weather as pleasant as during the summer months.

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PRACTICAL SYSTEM FOR THE SMALL REPAIR SHOP

What Systematic Operation Means to the Average Shop—Card System That is Simple and Covers Every Detail of Work on Automobiles—Methods That Eliminate Argument—Keeping Tabs on Men, Material and Time

In the operation of a very small repair shop, where the proprietor is also foreman, chief mechanic, treasurer, executive head and half the entire force, anything like an elaborate system for keeping tabs on men, material and the progress of the work is unnecessary. It is easy for the "boss" to keep his eye on the entire "force," and with the aid of a single book or a memorandum hook to keep his records of the day's work, receipts, expenditures and so on—records which it is profitable to keep even if the shop force consists of only "the boss and the boy," for no man's memory is as a written notation, especially in the opinion of a disputing customer who has his own peculiar way of remembering things.

Wherein "Keeping Tabs" Is Helpful.

If, however, the business grows until the force totals six, eight or ten men, or whenever it becomes necessary to employ a foreman, the shop is moved to more commodious quarters and it takes all his time to look after the "white collar" part of the work without doing any mechanical labor, the proprietor must, in nine cases out of ten, either adopt some sort of a system or lose money. The fact that the shop may make money does not indicate that a system is unnnecessary, for the chances are greatly in favor of increased profits if the proper steps are taken to avoid waste, not only of material but of time. Under the general head of material properly may come not only the stock used for repair work, but also tools and supplies of all kinds; and time may be taken as including not only the time spent in actual repair work, but also time spent in hunting for lost tools, making new ones, figuring up methods of doing jobs that have been done before but no one remembers just how—and so on. All men are not square dealers, either in time or in the use of the proprietor's property, and a check is required so that those who do not show the proper spirit may be remonstrated with more or less gently, as the exigencies of the cases may demand.

System That Promotes Patronage.

There is still another good reason for the adoption of a system in a small shop. While the customer himself is not always made to feel it, he is in reality the dominant factor in the business. The customer's money and the customer's goodwill are the things that make the business possible. Obviously the more customers the greater the profit; and if local patrons will bring their work always to the same shop—in other words, become steady customers—they can be relied upon to supply an income that can be roughly calculated at a given glance, which may be increased by the coming of new patrons. It does not require mathematical formulas to demonstrate that this way of doing business is far better and more conducive to the peace of mind and the prosperity of the proprietor than dependence upon a continuous influx of newcomers who, perhaps, are not expected to come again the next time there is a job to be done.

Of course, the whole thing focuses at the old, familiar point—the hackneyed statement that "a pleased customer comes again" covers it. What is likely to please a customer? Reasonable prices, work that can be depended upon, reasonably quick service and generally fair treatment and courtesy. In the matter of prices, it is clear that the bill rendered to the customer represents the cost of doing the work plus the repairman's profit. If the repairman knows exactly what the work cost him in time, material and overhead expense, he can add a decent profit and know that he is making a reasonable amount of money on the transaction and that the customer is getting the worth of his money. If it is possible only to guess at the actual cost of doing the work the profit added must be sufficient to cover possible errors in the guess; otherwise the repairman takes the risk of going into bankruptcy.

SMITH'S REPAIR SHOP
ORDER FORM

Date..... Job No. 858
Time.....
Make and Model of Car.....
Car No..... License No.....
Owner's Name.....
Address .....
.....

REPAIRS REQUIRED

I hereby authorize the execution of above work.

(Signature).....

Work completed..... Delivered..... Paid.....

Return this card to office when job is completed.

ORDER FORM THAT WILL AVOID DISPUTES

Eliminating Time and Stock Waste.

By the accurate checking up of time and material and elimination of waste in both it is possible to accomplish two results. The

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repairman can keep tabs on his financial condition and find out at any time how he is situated; and he can figure very closely on profits, if necessary, without getting on the wrong side of the books, to attract and hold his customers; or he can add the saving to profits, if no fault has been found with his prices. There is nothing, however, that so appeals to a man as to have a job done promptly and well and then be charged a price a little less than he expected to pay, and a shop that can do these things is not likely to suffer for want of patronage.

SMITH'S REPAIR SHOP
STOCK CARD

Date..... Job No. 858

Stock issued to..... Check No.....

Kind of Stock	Quantity

A new card must be made for each day's work and a new card for each new job. Same card must not be used for more than one day or more than one job number. Turn in stock cards at end of each day.

CARD THAT WILL KEEP TRACK OF MATERIAL USED

Three Card System for Small Shops.

A large shop where there are many men and things are done on a large scale demands a system that requires an amount of time and paraphernalia altogether out of question for a small establishment. With three sets of record cards, however, the little shop can get along very nicely, and the time spent in making the records often will be saved in looking up information and settling disputed points, altogether apart from the other advantages accruing from the systematic doing of things. To begin at the beginning—that is to say, when a car comes into the shop for repairs—a card, known as an Order Form, is made out by the proprietor or his deputy. The order forms are numbered consecutively, each car that comes in thus receiving its own "job number." The order form is dated and the time the car came in also is entered. The make and model of the car, its horsepower, factory number and license number and the owner's name and address are taken down. Then follows a blank space in which the details of the repair work required are inscribed, and following this is the trouble-saving formula, "I hereby authorize the execution of the above work," after which the person authorizing the work affixes his signature. In many places, the latter is not required, but it is a wise precaution and one that effectually prevents or settles disputes. The order form is made out in duplicate; one card goes with the car for the information of the men working on it and is returned to the office when the job is finished; the other, the original carrying the signature of the person authorizing the work, goes to the office file. When the work has been completed the date and time are placed on the original, and the record is completed when the date and time of delivery of the car and date of payment are added.

With this card filled and filed, there never can be an unanswerable question as to "Who told you to do that?" or "How long ago was So-and-So's car in the shop for a new clutch leather?" or "I told you to put in a set of new exhaust valve springs; why didn't you do it?" Both owner and repairman are protected, for by turning up the card the whole story is brought to light and responsibility fixed.

Time Checking to Reduce Loafing.

An important part of any system of records is the method of recording the time of the men. This involves not only "time-keeping" for payroll purposes, which is a simple enough matter, but also the apportionment of each man's time to the various parts of the jobs on which he may be engaged, which is not quite so easy of accomplishment. In a large shop a time-keeper is employed to make regular rounds and take from each man a record of what he has been doing, and this is entered in a suitable book. In a small shop, however, it is obvious that this method hardly is practicable, and the only way seems to be to have each man do his own time-keeping, entering up his time on the cards just before quitting-time at noon and at night. In fact, this system has been used to a very considerable extent in large shops, with fairly satisfactory results, although it has been almost entirely superseded by the method already referred to. It has been said, and it doubtless is quite true, that in an extensive establishment it is impossible to get the men to keep anything like accurate records; but the conditions in a small shop are very different, and if a man is given to understand what is expected of him when he is engaged, there is no reason why he should experience any trouble in keeping the cards properly—more especially as he is not expected to do this in his own time, but is allowed time during working hours.

Time Card System in Detail.

The time-card that is here reproduced is easily handled by any man. When a man is put to work on a car he notes the job number on the order card attached to the machine and puts the same number on his time-card; also the date and his own name and his tool-check number. Under the heading, "Work done," he puts down the things he has done and the hours between which the work was accomplished. For instance, "Grinding exhaust valves, 7.30 to 9 A. M. Taking up connecting-rod bearings, 9 to 5.30 P. M.," and so on. If there are unusual conditions which tend to lengthen abnormally the time required for a given job, they should be mentioned under the heading "Remarks." Each morning a new card is started, and each time a man goes

SMITH'S REPAIR SHOP
TIME CARD

Date..... Job No. 858

Name..... Check No.....

Work Done:	From To
Remarks:	

A new card must be made for each day's work and a new card for each new job. Same card must not be used for more than one day or more than one job number. Turn in time cards at end of each day.

CARD THAT ACCOUNTS FOR WORKMEN'S TIME

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from one car to another a new card is started; the same card never is used for more than one day or for more than one job number. At the end of each day's work the cards are turned into the office.

It goes without saying that this system of keeping time is not perfect; nor is any other. The perfect time-keeping system has yet to be devised. But it is reasonably accurate for small-shop purposes. It gives the proprietor the data he needs for figuring the time-cost on each job, and if the work has been spun out to what appears to be an unwarranted extent the man on the job can be called up and made to explain the items that appear out of the way. Of course, it is possible to "loaf" somewhat and get away with it; but, on the other hand, the fact that a man's record, made by himself, is always under the eye of the "boss" and that he is liable to be "jacked up" for anything not reasonably explainable acts as a strong deterrent. Moreover, comparisons are very easily made between the different men on similar jobs and between jobs done by one man at different times.

Records Better Than Recollections.

All this is extremely useful, for in time a man's cards form an index of his ability and his tendency to deal fairly or otherwise with his employer, and the card file can be made to furnish valuable information as to the time required for a given job, and so on. Again, Mr. Jones brings in his car for an overhauling and is told he can have it in about four days. "I can't wait that long," protests Jones; "you did the job for me in a day and a half last year." Up comes the card record, and it proves to Mr. Jones that his car was in the shop three days and a half; the "boss" has allowed an extra half day in his estimate because of the increasing age of the machine.

The third card is a stock card and, like the other two, bears blank spaces for the date, the job number and the name and number of the workman who makes it out; and it must bear but one date and one job number. The workman fills in what material he wants and the list or the single item, as the case may be, is initialed by the foreman or proprietor, who takes the opportunity, if necessary, to find out why six feet of high-tension cable is needed for a single two-foot lead, or why a foot of three-eighths tool steel should be issued to make a three-inch pin. The stock cards, turned in with the time cards at the end of the day, form a record of all the material issued during the day.

Stopping the Stealing of Stock.

There is no question as to the usefulness of a means of keeping tabs on stock. Only those who have been intimately connected with shop work are aware of the extent to which the misuse of material can be carried —and the term misuse covers not only waste, but the pilfering that is so common, if there is no trail to follow when suppplies seem to melt away with discouraging swiftness. Of course, there are many men who will not help themselves when something they particularly want is right under their hands and there is no check on its use; but unfortunately the other kind are sufficiently numerous to make a checking system valuable, if only as a means of reducing depredations to the minimum. The warning of an old hand to a new one, "Don't ever let the boss catch you swipin' anything; he's tighter'n hell!" perhaps is not all that could be desired from a lofty moral standpoint; but it certainly helps to keep down the bills for supplies of new stuff for the stock-room.

Turning In the Cards of a Day.

At the end of each working day each man has turned into the office time cards, showing in detail how he has spent the day—what jobs he has worked on, how much time on each job and what portion of the time on various portions of the work. Also each man has turned in stock cards showing what, if any, material he has used, and what he has used it for. If any jobs have been completed, the fact is indicated by the turning in of the order form, dated. The day's cards form a very complete record of time, material and completed jobs, and the progress of all work, and if any of the work is lagging it is quickly made evident, so that the proper remedy can be applied.

Collecting Data From the Records.

From the cards the time of the men is transferred to the time-book from which the pay-roll is made up; the stock used is entered up in a stock record kept for the purpose of checking, as nearly as possible, the consumption of material with purchases and to act as a reminder when anything runs low; and completed jobs are properly booked. Up to the time of completion of a job all the cards bearing the job number are kept together. When the last card comes in marked "job completed" all the cards are taken and the time and material costs totaled up, and the basis for the bill thus is obtained. After this the cards are transferred from the active file to the dead file, where they are available for reference, a small card index serving as a guide. A few cases of trouble over work done, facts that cannot be remembered or are remembered differently by different people, disputes over authority to do work or other incidents of the kind that are, unfortunately, sure to crop up more or less in such a business, are sufficient to prove the practical every-day value of such a record and filing system.

How the System Can Be Extended.

It is obvious that there is a good deal of elasticity in the system described. That is to say, it can be varied or amplified very considerably. If the shop is large enough to warrant the employment of a bookkeeper a daily report of the condition of the work could be made with little trouble, so that the proprietor could tell at a glance how things were moving without the trouble of looking up the records; and a weekly or monthly summary should be added. These and other possibilities of the system will suggest themselves as occasion arises. Even should the business grow to really large proportions—through the aid of the system, properly handled—amplifications made from time to time could be made to take care of increasing requirements without change in the forms or in the general method of using them. The stock record will keep pace with any increase if duplicate stock cards are made for the bookkeeper and the stock man. For a small shop, however, that is a little too big to be handled properly without a system, but does not warrant anything of an elaborate or expensive character, the method outlined is one that will be appreciated when its real usefulness has been demonstrated by actual service under working conditions.

Highwayman Steals Prospect List.

Highwaymen, it is generally supposed, care only for valuables; E. R. Greenlaw, a New Orleans salesman, however, claims to have found a robber in whose makeup there is a pronounced streak of meanness, for when the highwayman in question held up Greenlaw one night in the streets of that Southern city the robber not only took Greenlaw's money and jewelry but appropriated the salesman's prospect list. It was in a small notebook and contained the names of several hundred New Orleans people to whom Greenlaw expected to sell Regal cars. But for the fact that the Regal factory possessed a duplicate list, the robbery might have made a big hole in the salesman's business. As it was, it had the effect of delaying some of the sales several days.

Wherein Alcohol and Water Differ.

One of the peculiar properties of alcohol is that it mixes readily with water, the two liquids having a strong affinity for each other. On this account burning alcohol can be extinguished by the application of water, in which it differs from gasolene and oils, which, as is well known, float on the water and burn all the better for the extra spreading out.

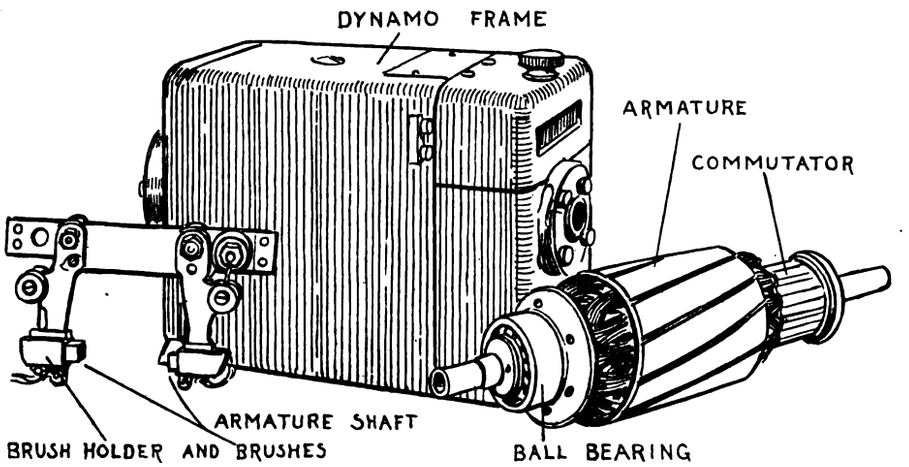
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MAKING PLAIN THE ELECTRIC LIGHTING SYSTEM

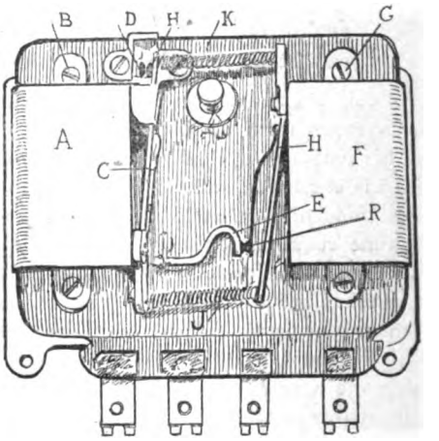
Characteristics of Three Widely Differing Apparatus Explained in a Manner to Emphasize Their Real Simplicity—The Value of Periodic Inspections—What to do in Case of Trouble

(This is the eighth of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render easier their care and repair by the dealer and owner alike.)

It is well established just where the dealer stands in his relation to the manufacturer and the consumer, but it is not quite so clearly understood that he represents the physical embodiment of service. There can be no gainsaying that a good dealer, a dealer who is good for the reason that he is equipped mentally and with material to render real service, is valuable alike to the motoring community and to the manufacturer. And in this connection the word service can be made to cover a multitude of things not necessarily sins.



WARD LEONARD DYNAMO SHOWING BRUSH HOLDERS AND ARMATURE



WARD LEONARD REGULATOR

Applying the Ounce of Prevention.

There is one branch of the service business—the service part of the business assuredly should be a well established department—which gradually is receiving greater attention. It is that branch which has to do with periodic inspections of mechanisms to make certain to the satisfaction of the dealer, the manufacturer and the owner, that component parts are fulfilling their functions in the proper manner. In other words, the value of the ounce of prevention gradually is being recognized in its true light in its application to the maintenance of automobiles.

There are few automobile factories which are not equipped with service stations where adjustments, mental and mechanical, can be made and repairs effected with despatch. Latterly, several prominent manufacturers have announced the policy of free inspection from time to time, secure in the knowledge that service of this kind reverts not only to the customer in added satisfaction but to themselves and to their dealers as well. If a likely trouble can be ascertained before it actually develops it can be prevented in nine cases out of ten. The effect on all concerned easily can be imagined. The policy is in a measure an application of the old proverb "Forewarned is forearmed."

Nor is this policy confined to manufacturers of automobiles. It is spreading gradually to manufacturers of accessories as well. Already several service stations maintained by ignition apparatus and carburetter manufacturers offer free inspection at periodic intervals, and, needless to add, the results of the practice have been universally good. Ignition apparatus, of course, always has been and in all probability always will be more or less of a mystery to the average individual. Sad to relate, for there is little real reason for the condition, the same can be said of electric lighting and engine starting systems, which fact lends emphasis to the necessity for service stations where this recent development in the automobile business can be intelligently handled.

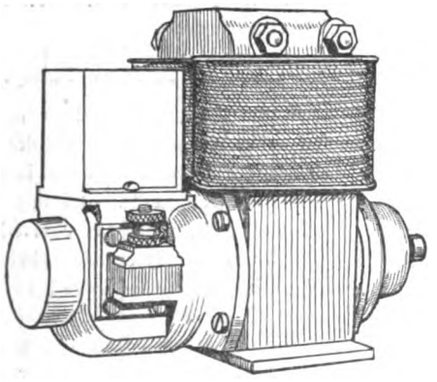
Relative Ease of Obtaining Knowledge.

In the larger cities where electrical apparatus manufacturers maintain branch establishments or have representation the problem is no problem at all, for it is a simple matter, and an absolutely essential one, for manufacturers to educate their own representatives. But where the manufacturer has no representation other than that afforded by automobile dealers handling cars equipped with his products the problem is a real one. And in the majority of cases it can be solved only by the dealer educating himself. But that the education is fairly easy of acquisition has been made plain in the last seven issues of Motor World, in which the real simplicity of a number of electric lighting systems has been pointed out and their care and repair elucidated. Incidentally, the articles have served to emphasize the actual lack of complexity of such systems and the really small amount of care that is necessary. In many cases, care and repair mean nothing more than periodic and intelligent inspection. In the present article several other systems are treated in a manner to make plain just where to look for likely trouble and just what to do to prevent or to remedy it.

The first consideration in any such system is to keep the apparatus perfectly clean. Cleanliness may not be next to godliness in this connection, but it surely is next to efficient operation, for unless the parts are kept free from dust and dirt and grease they cannot be expected to perform their functions properly and without giving some sort of trouble. In the majority of cases, generators are tightly enclosed to exclude

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foreign matter, but it is difficult to close all openings to the absolute exclusion of dust —and water—and therefore that which finds entrance should be carefully removed at stated intervals, a soft brush being the preferable means of removal. Of course, where the accumulations have become



FISHER U-TYPE GENERATOR

caked by reason of the presence of oil or grease other means of removal will be necessary and of them none is better than a piece of cheesecloth dampened, but not wet, with gasolene. The gasolene will cut the grease and remove the dirt and will evaporate rapidly, leaving nothing to impair the insulation. Care should be taken, however, not to use too much gasolene, for it is a solvent of rubber and must not be permitted to remain on rubber insulated wires, etc.

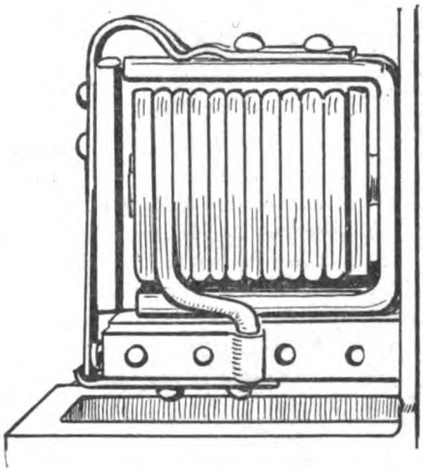
When Openings May not be Closed.

Generally, it is not permissible to apply the ounce of prevention by closing up all such openings which serve to admit dust. Sometimes they are put there for the purpose of providing a circulation of air within the machine in order to prevent undue temperature rise. When such is the case, they generally are partly closed by means of screens, in which case care should be taken to keep the screens clean.

As is the case with so many other systems, the generator in the Ward Leonard system, manufactured by the Ward Leonard Electric Co., of Bronxville, N. Y., is completely enclosed and is practically dust and waterproof. The dynamo is of the plain shunt wound type and the armature is of the drum wound type, with the core slightly skewed to increase efficiency and reduce noise in operation. The whole system consists of the dynamo, an automatic electric current regulating device, an automatic cut-out and a pair of storage batteries. The Ward Leonard system differs from others in that it employs two separate batteries instead of the usual one. The batteries are smaller than the ordinary ignition battery. A conveniently located switch permits either to be connected to the lighting or the ignition circuit. The reason for the use of the two batteries is made plain by the wiring plan, which provides for grounding the ignition circuit with an all wire circuit for the lighting system. By the use of two batteries, the danger of short circuits between the two systems is eliminated.

Care of the Brushes and Commutator.

Except for occasional inspection of the dynamo casing and the inside of the mechanism, which should be periodic, to clean away accumuations of dust and dirt and to make sure that wires and connections are unbroken or loosened, little other care will be necessary except that accorded the brushes and the commutator. These parts are the only parts which should ever require more than perfunctory attention. As



FISHER CUT-OUT

the machine is self-regulating, sparking should not occur and the brushes should wear for indefinite periods without replacement.

The brushes and the brush holding mechanism are shown in the accompanying illustration removed from the dynamo, the operation being simple and requiring nothing more than the removal of four small screws and the disconnection of the brush wires. The brushes should be taken out of the holders at regular intervals, say every 1,000 miles, and thoroughly cleaned with gasolene. When they are replaced care should be taken to see that they are put back the same way they were taken out, for after a certain amount of wear they will have acquired a smoothness and a finish which is highy desirable. In making the connections be certain that the brush wires are replaced properly, for it they are reversed the dynamo will not generate. Incidentally, to cause the dynamo to generate when the armature is rotated in the opposite direction merely requires that the brush leads be reversed.

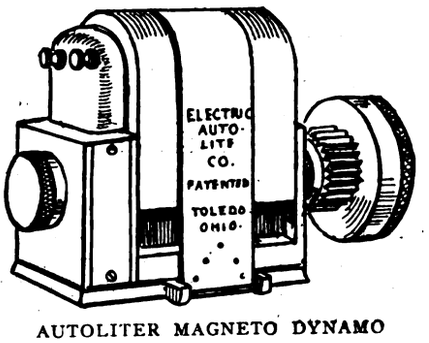
When in the best of condition the commutator will exhibit a brownish, glazed appearance and should not be touched. If it is scratched or cut, however, the brushes should be examined to make sure that they are long enough to press properly against the commutator, and if they are not they should be replaced at once, or taken out if no new ones are at hand. Slight scratches may be removed by applying very fine sandpaper to the commutator with the machine running, care being taken first to remove the brushes. Access to the commutator and the brushes is through a removable cover held in place by means of a thumb nut.

Current regulation in the Ward Leonard system is obtained with the aid of a combined electro-mechanical device contained in a tight housing mounted on the dash of the car. The device itself is shown herewith with the cover removed in order to make plain its structure and operation. In it are combined the automatic cut-out and the regulator. Normally, the circuit between the battery and the dynamo is open and is not closed until a car speed of approximately 10 miles an hour is attained, when sufficient current is generated to charge the storage battery.

Operation of Cut-Out and Regulator.

Immediately the current generated by the dynamo exceeds that of the battery the coil A in the accompanying picture of the cut-out and regulator becomes magnetized sufficiently to attract the arm C, thereby closing the contacts D and H and establishing the connection between the dynamo and the battery. When the engine is stopped, the action of the spring K serves to separate the contacts and the circuit is broken. The action is entirely automatic.

The regulator mechanism is at the right and is different in action from anything else of its kind. The regulator consists of a series coil (F) and armature (H) which mounts a contact (R) and a fixed contact (E). The series coil is set for a predeter-



AUTOLITER MAGNETO DYNAMO

mined amperage, usually 10, so arranged that when 10 amperes is reached the magnetism of the coil is sufficient to attract the armature (H), which separates the contacts (E and R), thereby inserting a single step of resistance in the field. When the output

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drops to 9.9 amperes the series coil is shunted by the decrease in magnetism in the series coil which permits the contacts to come together under the action of the spring (J). Consequently, the armature of the regulator is constantly vibrating, its period of vibration corresponding to the speed at which the car is driven, which governs, in turn, the output of the generator. The speed at which the armature vibrates, however, is so great as to have no effect which can be detected in any fluctuation in the brightness of the lamps.

Care of the Contacts that is Needed.

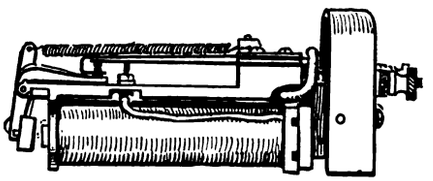
In caring for the regulating and circuit breaking mechanism, the contacts seldom, if ever, will require to be touched, though it can do no harm to inspect the mechanism from time to time to make sure that it is perfecty clean and that it is operating properly. Unless the devices give unmistakeable evidence of some sort of derangement they had best be let severely alone, particularly as regards their adjustment. If the contacts show signs of burning or corrosion, they may be cleaned with a very fine flat file or two pieces of fine emery cloth glued to opposite sides of a piece of thin Bristol board. In lubricating the dynamo, not more than two or three drops of fine machine oil should be placed in the oil holes at the ends of the armature shaft about every two or three weeks—not oftener unless the car is driven continuously.

In the Fisher lighting system, manufactured by the Fisher Electrical Works of Detroit, Mich., the generator is conspicuous for the absence of any regulating devices whatsoever. It is so constructed that it operates at crankshaft speed and the field "builds up" very rapidly until the normal output of about six amperes at 950 revolutions a minute is reached, after which the field "builds up" so slowly as to cause no material increase in current production up to speeds of 2,000 revolutions a minute. The whole system is embraced in the generator, the automatic cut-out and a storage battery.

Duties of "Pig Tails" Made Plain.

The automatic cut-out is contained in a small housing mounted over the brushes and commutator and consists of single electromagnet; it is shown by the accompanying drawing. When the current generated by the dynamo is sufficient to charge the battery the magnetism of the coil is sufficient to attract its armature, thereby closing the circuit. When the engine is stopped, the armature returns to its normal position under the action of a spring and the circuit is opened.

The removal of the cut-out housing, possible by taking out two screws which hold it in place, reveals the commutator and the brushes which should be inspected at regular intervals and cleaned of accumulations of dust or oil. The brushes are fitted with what in electrical engineer's parlance are styled "pig tails," or short wires soldered or otherwise fastened to them to make certain the collection of current. Consequently there is less necessity for taking out the brushes and cleaning them than there is in machines in which no "pig tails" are used. The cut-out is rugged in construction and,

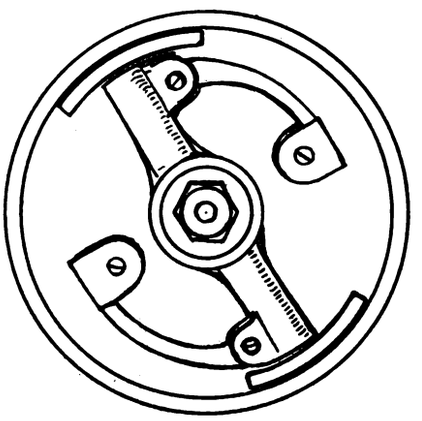


AUTOLITER CIRCUIT BREAKER

as the contact points are platinum-iridium, they should wear for indefinite periods without attention.

What to do When the Current Fails.

In the event of failure to generate, the cut-out first should be inspected to make sure that contact is made when the armature is speeded up. If the contact points come together, but without making the circuit, it is altogether likely that they are slightly corroded, in which case they should be cleaned with a small, flat file. The brushes are the only other parts which are



AUTOLITER GOVERNOR PULLEY

at all likely to give trouble, and these will not give trouble if they are inspected from time to time, their connections gone over and accumulations of grease or oil removed with a cloth dampened with gasolene. No attempt should be made to adjust the brush spring tension, for it is set at the factory for the proper pressure and should not be disturbed. If the brushes apparently do not press tightly enough against the commutator, it is time to replace them with new ones.

For regulation in the Autoliter generator, manufactured by the Electric Auto-Lite Co. of Toledo, O., sole dependence is placed upon a mechanical clutching device which maintains the speed of the armature practically constant, regardless of engine speed fluctuations. The dynamo itself is of the magneto type in which the field is formed of permanent magnets. The armature is of the drum-wound type. The whole mechanism is enclosed and the speed governing the circuit breaking devices are self-contained within the dynamo.

Governing with a Friction Pulley.

By way of obtaining constant armature speed above a predetermined crankshaft speed, a centrifugal governor pulley is employed; it is mounted at the driving end of the armature shaft, which is carried in high duty ball bearings. It consists, briefly, of an outer casing which is keyed to the driving sprocket, silent chain drive being employed wherever practicable, and a pair of arms mounting shoes which bear against the inner rim of the circular housing, the arrangement being shown by the accompanying sketch. These arms are keyed to the armature shaft. When a predetermined armature speed is reached, the action of centrifugal force on the two weights shown in the picture causes the shoes to be lifted away from the contact with the driving rim and the speed of the armature drops until the pull of the centrifugal force decreases sufficiently to permit them to come into contact with the rim again. They are held in their normal position against the rim by a spring.

Access to the governor pulley is had by removing a small brass plate over its end, the plate being held in place by means of a circular wire which fits into a slot. Contrary to expectations, no lubrication whatsoever should be used in the pulley, for, as is pointed out by the manufacturer, the presence of oil is likely to cause undue slippage and therefore reduce the output of the dynamo. Incidentally, it may cause gumming, in which case the parts will stick, so increasing the output as to endanger the battery. The only lubricant permissible under any circumstances is a very little dry flake graphite, though this even should be omitted unless the governor shows a tendency to "hold on" too long, and thus permit the charging rate to be abnormally high.

Removing Circuit Breaker Mechanism.

The cut-out is an electro-magnetic device and is contained within the arch of the magnets. It is held in place by means of two small screws, which, if removed, permit the whole mechanism to be withdrawn. Before it is taken out, however, it will be necessary to remove the brushes. These may be taken out by taking off the two side plates and lifting the tension springs which hold them against the commutator. The

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cut-out is of the orthodox magnetic type and is shunted across the brushes, the construction and operation of the mechanism being shown by the accompanying drawing. Directly the strength of the generated current is sufficient to charge the storage battery, the circuit is closed, to be opened again automatically when the engine is stopped.

Care Due the Contact Breaker.

Inasmuch as the contact breaker in a magneto makes and breaks the circuit many hundreds of times every minute and, despite this comparatively rigorous work, seldom gives trouble or requires attention, it may be appreciated that the contacts in any automatic circuit breaker scarcely are likely to give trouble, for they operate only when the engine is stopped or started. Incidentally, as they almost invariably are set to operate at or near the charging rate of the battery, they therefore operate under a minimum difference of potential and current and are not liable to damage through sparking. Dirt or oil, especially if the oil is not perfectly free from acid, will cause the contacts to corrode and therefore to offer resistance to the flow of the current. Needless to add, all dirt and oil should be carefully removed.

Causes of Lessened Output.

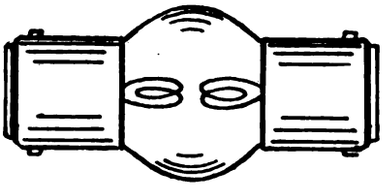
If with the Auto-Liter the current strength becomes gradually weaker, the trouble must be with either the governor pulley or the brushes. Poor commutation, resulting from dirty or worn brushes or a dirty commutator, will result in decreased output; the remedies for these troubles readily are apparent. If the governor pulley slips excessively at low rotative speeds the current output also will be lower than it should be. Slippage may be arrested by in- find trouble is in the circuit breaker, which return the governor arms. If the current stops altogether the most likely place to find trouble is in the circuit breaker, which may be stuck. Occasionally a light blow with a small tool on the top of the magnets will release the mechanism, though it is always the better part of wisdom in such cases to remove the device and make sure exactly what causes the trouble.

Loose Wires as a Source of Trouble.

Loose wires, of course, are a prolific source of trouble, though despite comparative frequency of the trouble and the ease with which it originates and can be remedied it seldom is given the attention it warrants. There are almost any number of cases on record where a factory expert has been called to remedy "serious trouble" which when traced down has been found to be nothing more than a broken wire or a loose connection. No automobile is absolutely free from vibration, and as long as vibration exists loose connections will continue to cause more or less trouble. The condition, however, suggests the remedy—and it is a remedy that is as readily and easily applied as it is discoverable by systematic and, above all, periodic inspection.

Double-Filament Bulb for Emergencies.

Although the electric light bulbs such as are used in head, side and tail lamps are durable and can be expected to last in service for protracted periods, they nevertheless have a disconcerting propensity for "burning out" at unsuspected moments when their lease of life is about up; there is no way of telling just when an incandescent bulb will fail after it has been in service for some time; no two of them will last exactly the same length of time, though all of them have a comparatively long life. It was for the purpose of obviating the inconvenience of police interference in the event of a non-illuminating tail lamp and to provide a spare emergency



AVERY TWIN-FILAMENT LAMP

bulb that cannot be left at home inadvertently that the Avery Portable Lighting Co. of Milwaukee, Wis., developed the double filament lamp shown by the accompanying illustration.

The bulb was developed primarily for use in the Electrobola lamps manufactured under patents by the Avery company, though its construction is standard and it may be used in any lamp fitted with an Ediswan or "bayonet" socket. In its simplest aspect, the bulb is an ordinary one, except that it has two filaments and two bases; each filament is connected to its respective base. Hence, if one filament burns out on the road it is merely necessary to reverse the bulb and use the other filament. The bulb represents advanced practice over the older though little known type of bulb in which two filaments connected in multiple are used for the reason that both filaments then are incandescent at the same time and the one which remains after one has been burned out may have but very little longer life than the other.

Inoperative Fan for Winter Work.

When the weather becomes so cold that the full heat-dissipating capacity of the cooling system reduces the temperature of the jacket water too much and the engine is kept too cool for the most efficient running, it is better to remove the belt and run without the fan, if this can be done, than to partly cover up the radiator. In the first place, the wear and tear on the fan bearings and the belt are avoided for the time, and in the second place, the appearance of the car is not marred.

Rubber Mallet to Prevent Marring.

It sometimes becomes imperative to hammer or tap a part which has a polished surface, and unless precautions are taken the operation results in a surface which is more or less unsightly. On such an occasion a rubber mallet which can be purchased at a supply store should be used. Lacking the instrument, or the means of obtaining it, a pad can be made from several layers of old rubber, which will prove effective in preventing marring.

Improvement of Hand Drill Possible.

The anti-friction qualities of a hand drill, brace or any tool in which considerable end thrust is brought on a revolving spindle often can be improved very considerably by inserting a steel ball between the end of the spindle and the old bearing surface. Sometimes this is done when the tool is made, and in some cases where it has not been done there is not room for a ball; but where a ball can be used it is a great help.

Grease Facilitates Screw Removal.

Machine screws that are put into hot places, as well as those used where there is dampness, are apt to rust and present difficulties in the way of removal after having been in position for some time. The use of a little graphite grease, or graphite and oil, rubbed on the threads, will make it easy to remove such screws even years after they were put in, so far as any tendency to rust and "stick" is concerned.

Soldering to Remedy Cracked Handles.

If cracked, a hammer handle or any other tool handle made of wood, may be "fished" by binding it with brass or copper wire put on very tightly and wound smoothly and evenly, and then tinned over with very soft solder, which requires but little heat to melt it. The soldering must be done quickly to avoid overheating the wood. A well made repair of this kind is good for years, under ordinary conditions.

Improvised Rivets from Escutcheon Pins.

Very satisfactory rivets for small work can be made from brass escutcheon pins with round heads, the points being cut off as much as may be necessary to obtain the desired length. Escutcheon pins can be obtained at any hardware store.

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In the RETAIL WORLD

J. W. Feeter is building a two-story garage on the Milton turnpike, Highland, N. Y.

Biggers Bros., horse liverymen in Birmingham, Ala., have given up that trade and will enter the automobile business.

S. H. and L. H. Tolhurst, of Los Angeles, Cal., are inviting bids for the erection of a one-story brick garage, 60 x 155 feet; it will stand on Figueroa street, south of 7th.

Mahion Morey of Newark, N. J., has secured permission to erect a garage at 12-14 West Jersey street; its cost will be $5,905. Morey is also part owner of the Morey-Larue Laundry Co.

Ernest P. Chesbro of Willimantic, Conn., has purchased Frederick M. Little's interests in the Independent Repair Shop; Chesbro will continue the business with Louis Wilson as manager.

Arthur Ballantyne and R. F. McKinnon, the latter the owner of a blacksmith shop in San Diego, Cal., are to enter the garage trade; their shop, 38 x 80 feet, will adjoin McKinnon's "smithy."

New Automobile Co. has opened up in Jacksonville, Fla., at 919-21 Main street; a garage will be operated and Case cars sold. Judge H. B. Philips is president and N. B. Downey sales manager.

The Southern Garage, in Bakersfield, Cal., has bought out the Central Auto Co., on 13th street; the Central stock and business will be removed to the Southern headquarters, on Chester avenue.

William B. and Fred Waters have purchased the newly established garage business of Morgan V. Disbrow in Red Bank, N. J. They also conduct the Red Bank Garage on West Front street.

The Kansas City Automobile Supply Co., now located at 1504 Grand avenue, in that city, has accepted plans for the construction of a four-story fireproof building on McGee street, near 18th; the cost will be $40,000.

Jackson Motor Car Co. is the style under which a new business has opened up in Nashville, Tenn., at 526 Broad street; H. C. Gillespie is general manager. As the name indicates, the company will handle the Jackson line.

New quarters are being erected by the Tioga Automobile Co., of Philadelphia, Pa., at Broad and Tioga streets; there will be 10,000 square feet of floor space. The company handles National, Hupmobile and Nyberg cars.

The Great Western Auto Sales Co., a new incorporation, has opened up in Indianapolis, Ind., at 425 North Meridian street, where it will sell Great Western cars. C. E. Williams, assisted by his brother, J. E., will manage the business.

Simpson, Swain & Simpson, garage operators in Gridley, Cal., have purchased the City Garage, located at Virginia and Magnolia streets, of J. F. Shaeffer & Son; the new owners will continue their acquisition and also their former garage.

Thomas Roberts, formerly general manager of the United Motor Philadelphia (Pa.) Co., has formed a partnership with Charles N. Reeves under the style Roberts & Reeves; they will handle the Marion car. The firm has located at 1335 Race street.

James Whitney, of Elmira, N. Y., formerly a member of the firm Bishop & Whitney, has formed a partnership with his brother, Albert Whitney of Canaseraga, in the same state, where they will open a garage on Dewitt street; they will handle Ford cars.

Gildel Auto Co. is the style of a new agency in New York City, the name being formed from those of Gilman and Videl, the organizers; the company has located at 1930 Broadway and handles Kline cars exclusively. Gilman is president and Videl sales manager.

The Milwaukee branch of the Studebaker Corporation has been taken over by the Wollaeger Sales Co. The latter part of this month the company will remove from the Studebaker headquarters in the Stroh building to 417-21 Wells street. John G. Wollaeger is proprietor.

The recently incorporated Guarantee Motor Car Co., of San Antonio, Tex., has taken possession of a new garage and salesrooms at 104 East Travis street; Krit and Cole cars are stocked. The officers are: President, J. P. Hagan; vice-president, H. J. Smith; secretary and treasurer, C. W. Voss.

Harry Bransetetter, formerly manager of the Chicago Kissel branch, has branched out for himself; he will erect a commercial car garage and salesrooms on 28th street between Wabash and Michigan avenues, 65 x 150 feet. One or two truck agencies will be secured.

Under the style Imperial Garage & Repair Co. a new business has been established in Hartford, Conn., at 120 Allyn street; L. R. Spencer, T. S. Painter and Howard D. Graves are the men concerned. Graves is Henderson distributer.

M. V. Doud, formerly eastern sales manager for the Locomobile company, has formed the D & H Distributing Co. in Bridgeport, Conn. Kline cars will be stocked. Doud is treasurer and general manager; the other officers are: John Heapley, president; G. H. Crauford, vice-president.

The Cumberland Motor Co., 138-40 3d avenue, North, Nashville, Tenn., purposes building a new home for itself at Broad street and 15th avenue; it will cost $20,000; the site cost $10,000. The company handles Abbott-Detroit, Little and Empire cars. The building will be ready for occupancy February 1 next.

The Petty-Calhoun Co., of Macon, Ga., has dissolved. R. L. Knight and C. L. Calhoun have purchased the interests of Petty, the third partner, and have merged the business with that of the Macon Auto Co. at 519 Poplar street. The Petty-Calhoun Garage, on 3d street, has been discontinued. The Macon Auto Co. now consists of Calhoun, Knight, M. N. Crisswell, J. D. Stubbs and F. T. Abel.

T. A. Probey, who heretofore has handled the Michigan "40" car in Washington, D. C., in connection with the Probey Carriage Co., has formed a separate company to exploit that automobile; the new corporation is styled Michigan Motor Co. and has as officers: President and treasurer, T. O. Probey; secretary, G. R. Stuart; sales manager, F. C. Sibbald. Quarters have been secured at 1230 Wisconsin avenue.

The Williamson Garage Co.'s building at 88-90 Albany street, New Brunswick, N. J., has been purchased by the newly organized Middlesex County Garage and Sales Co. The latter will remodel the structure and maintain a garage; the directors of the new company are: Ralph P. Beardsley, of Highland Park, who will be manager; Jas. Mershon, George L. Burton, Charles A. Oliver, Frederick Gowen and Joseph H. Lee.

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TINKERING BEGINS ON NEW YORK AUTOMOBILE LAW

"Flat Rate" Now Proposed to Meet Unceasing Cry for More Money —Other Provisions for Protection of Public.

Tinkering with New York's automobile law—a popular annual pastime—already has commenced, although the legislature has not yet convened and, as usual, the tinkers have rediscovered not only that the public requires more protection but that the State itself needs, or desires, more "automobile money." Assemblyman Callan, the young man who fathered the existing law, is known to be keen for the establishment of a State constabulary to assist in enforcing it, but apart therefrom a number of proposed amendments have been drawn up and are now under consideration for introduction at the next session of the Legislature.

By far the most important of the proposed amendments, and the one which may be expected to be felt most keenly by the owner, is one by which it is hoped to substitute for the existing fixed tax a new measure levying a flat rate of so much per horsepower. Connecticut and several other States already have such a law in force, the Connecticut law providing for a flat fee of 50 cents per one horsepower. The far-reaching effect of the law is best made plain by the increase in revenue which it causes. For instance, if a similar law were put in force in New York State, where cars of less than 25 horsepower are assessed $5, the assessment would amount to $12.50; similarly, 40 and 50 horsepower cars would be assessed $20 and $25, respectively, instead of the $15 fee for both which now is collected. According to statistics, it has been computed that more than 40 per cent. of the cars licensed in New York State are of less than 25 horsepower, and it is estimated that under a law similar to the Connecticut law at least a quarter of the registration fees would be just doubled.

Following is the list of proposed amendments, which, with others, will be taken up for consideration and action by the New York State Automobile Association at its annual meeting in Utica, N. Y., on December 11 and 12:

Requiring all operators of cars to be licensed.

Providing a flat horsepower registration fee instead of the present graduated tax.

Prohibiting the enactment of local speed ordinances.

Prohibiting the use of manufacturers' and dealers' "M-plates" except in demonstrating cars or in removing a car from place to place for the purposes of sale. Manufacturers' plates in duplicate to have separate marks of distinction.

Exempting from tax only cars owned and controlled by State and municipal authorities and used exclusively for official business.

Permitting non-residents registered in other States to operate cars in New York State for an unlimited period.

Legislation to abate the smoke nuisance and unnecessary noise.

Requiring number plates to be kept reasonably clean and prohibiting the loaning, renting or changing of number plates from one car to another.

Requiring public garages, as well as manufacturers and dealers, to keep a record of every automobile which enters or leaves a garage.

Making the operation of a car by an intoxicated person, or in a careless or reckless manner, a criminal offense, punishable upon conviction by imprisonment.

Giving to the State power to suspend or revoke an operator's permit for cause after a hearing.

Giving State automobile inspectors the power of constables, except the service of a process.

Mulford "Makes" Middletown Meet.

Ralph Mulford "made" the race meet which was run at Middletown, N. Y., on Saturday last, November 9th, under the auspices of D. Sheldon. He took each of the three competitive events, and in his Mason car turned the fastest mile in the time trials. His victories comprised a five-mile race for cars with displacements of under 601 inches, a three-mile free-for-all handicap, and what was to have been an Australian pursuit, but which developed into a five-mile time trial when Mulford's single contender — Stork (Thomas) — had motor trouble and dropped out after the third lap. The summary:

One mile, time trials—Mulford (Mason), time, 1:19⅕; Stork (Thomas), time, 1:21⅕; Randall (Buick), time 1:37.

Five miles, for cars with displacements of under 601 inches—Won by Mulford (Mason); second, Randall (Buick); third, Stork (Thomas). Time, 8:28⅕.

Three miles, free-for-all handicap—Won by Mulford (Mason), scratch; second, Stork (Thomas), out 4th lap.

Five miles, Australian pursuit—Won by Mulford (Mason). Time, 6:45. Stork (Thomas) out fourth lap.

One mile, to establish a local track record—Mulford (Mason). Time, 1:16.

One-half mile, time trial—Mulford (Mason). Time, 0:36⅘.

GRENNON WINS "LARGER" EVENTS AT NORFOLK MEET

Driving a Mercer, he Accounts for Two of Three Competitive Events —Cook and Menenghetti also in Evidence.

Far and away the most interesting of the four numbers which formed the program offered by the E. W. Powell troupe of racing drivers on the Lafayette half-mile track at Norfolk, Va., Friday last, 8th inst., was the 10-mile free-for-all, in which Joe Grennon, who drove a Mercer, led home the other contenders—Henri Hickman (Mercedes) and Louis Menenghetti (Fiat). Grennon's time for the distance was 13:21½. Grennon also accounted for the three-mile free-for-all, in which he was opposed by George Cook (Pope) and Hickman in the Mercedes, his time being 4:10. The five-mile event for cars with displacements of under 601 inches went to George Cook (Pope), who covered the distance in 7:01. A single mile time trial driven by Louis Menenghetti in the Fiat in 1:18⅘ completed the program. The summary:

Five miles, for cars with displacements of under 601 inches—Won by George Cook (Pope); second, Henri Hickman (Mercedes); third, H. Kyle (Fiat). Time, 7:01.

Three miles, free-for-all—Won by Joe Grennon (Mercer); second, George Cook (Pope); third, Henri Hickman (Mercedes). Time, 4:10.

One mile, time trial—Louis Menenghetti (Mercedes). Time, 1:18⅘.

Ten miles, free-for-all—Won by Joe Grennon (Mercer); second, Henri Hickman (Mercedes); third, Louis Menenghetti (Fiat). Time, 13:21½.

Decision of Minnesota Referee Upheld.

The decision of H. J. Clark, who, as referee of the Minnesota State Automobile Association's tour to Winnipeg, which was held August 8 to 15, disqualified the Studebaker car driven by H. W. Soules for having "taken a short cut" at Foxhome, Minn., has been sustained by the contest board of the A. A. A. Clarence Munzer, who drove the Hupmobile in the roadster division and whose score was tied with that of the Studebaker driver, has been awarded the Minneapolis News trophy for making the best score in the roadster class.

Charles W. Barnes was elected president of the Kansas State Automobile Association at the annual confention and election of officers at Topeka. D. E. Watkins of Kansas City was elected secretary.

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1,017,939. Unloading Device for Motors. Robert B. Williamson, Milwaukee, Wis., assignor to Allis-Chalmers Company, a Corporation of New Jersey. Filed Apr. 30, 1909. Serial No. 493,120.

1. In combination, a motor, a pump driven thereby, means controlling the supply of power to the said motor, unloading means for the pump, and a mechanical connection between said power-controlling means and said unloading means whereby the operation of the former to admit power to the motor operates the latter to unload the pump.

1,017,948. Switch for Ignition Systems. George H. Boynton, Dalton, Mass., assignor to Pittsfield Spark Coil Company, Dalton, Mass., a Corporation. Filed July 13, 1908. Serial No. 443,265.

1. In a switch of the class described, in combination, a base-piece, a switch-lever pivoted thereto, contact-points engaged by the switch-lever, two sets of conducting bars, means for insulating the sets of conducting bars from each other, a plug, the insertion of which closes one set of conducting bars and opens the other set, and upon the withdrawal of which allows the first set to open and allows the second set of conducting bars to close, and connecting means between the plug, switch-lever and the conducting bars.

1,017,953. Recoil Neutralizer. Alonzo C. Buttman and Franklin P. Gable, Grandview, Iowa. Filed Oct. 5 ,1911. Serial No. 652,969.

1. In a recoil neutralizer, the combination with a cylinder connected with one member, a piston therein, a piston rod connected with the piston and extending through the cylinder head and connected with another member, and a spring connecting said members and whose recoil is to be neutralized; of an inlet valve opening inwardly into the cylinder at one side of the piston, an outlet valve opening outwardly from the cylinder at the other side of the piston, relief valves of smaller capacity than said inlet and outlet valves and located adjacent thereto, that near the inlet valve opening outward from the cylinder and that near the outlet valve opening inward toward the same, and independent means for permitting the adjustment of said relief valves.

1,017,954. Transmission Gearing. Horace M. Cake, Washington, D. C. Filed Oct. 12, 1909. Serial No. 522,248.

1. In a transmission gearing in combination, a driving shaft, a transmission head carried on said driving shaft, compensating gears on said transmission head, a face plate carrying a beveled gear thereon, a tubular shaft, a casing integral with said tubular shaft, a cylindrical shaft, a beveled gear carried upon said cylindrical shaft, transmission shafts, gear means for connecting said cylindrical shaft with one of the transmission shafts and gear means for connecting said tubular shaft with the other transmission shaft.

1,017,956. Tire Setting Tool. James F. Carter, Wadley, Ala. Filed July 6, 1911. Serial No. 637,179.

A tool of the class described consisting of a body portion formed of metal constituting a handle, one end of the body portion being bent at right angles and thence forwardly and thence inwardly to form an offset hook ,a staple secured to the body portion adjacent the hook and projecting from the body portion in a direction opposite the hook, and a hook movably connected at one end with said staple.

1,017,961. Anti-Skidding Device. Horace Arthur Fisk, Clinton, Mich.; Jegerson C. Fisk, administrator of said Horace Arthur Fisk, deceased. Filed Oct. 27, 1910. Serial No. 589,346.

1. In an anti-skidding device comprising a continuous band, a plurality of links arranged substantially in the center of the band and having their bottom portions curved, bolt openings formed near the ends of each link, said links being provided with central flanges having serrations formed in their top edges, plates secured to the band and arranged at the side of each link in oblique relation thereto, said plates having upwardly extending flanges formed integral therewith, bolts having forked ends pivotally connected to the upwardly extending flanges, the remaining portion of said bolts passing through the registered openings in the ends of the links.

1,017,973. Wheel for Road Vehicles. Edgar Charles Horner, Clapham Park, London, England. Filed Oct. 27, 1911. Serial No. 657,131.

1. In a wheel for road vehicles; the combination with a hub, an inner tire-retaining flange fixed to said hub, a flat outer ring extending inwardly of said inner tire-retaining flange, a plurality of radially projecting pins fixed to the inner periphery of said outer ring; of a removable outer tire-retaining flange, an inner flat ring extending inwardly from said outer tire-retaining flange and having a plurality of slots extending for a distance from the inner edge of said inner ring only in a direction parallel with the axis of the wheel, said slots being so arranged as to be engaged by said inwardly projecting pins on said outer ring when the inner ring is moved in an axial direction within the outer ring, means for insuring the correct position of the said pins and slots when placing said inner ring within said outer ring, and means for locking said pins in said slots to secure said inner ring to said outer ring.

1,017,980. Elastic Tire. Joseph Lazarus, Boston, Mass. Filed Dec. 12, 1910. Serial No. 596,770.

1. The combination with a wheel, of an elastic tire having two resilient sides connected to each other by chains forming an annular trough-like structure in which the periphery of said wheel is located.

1,018,006. Resilient Tire. Marshall C. Rogers, Williams, Cal. Filed Aug. 29, 1910. Serial No. 579,507.

1. In a vehicle tire, the combination of a flexible, circular continuous casing, having clencher shoulders and clencher rings adapted to engage the same, a felly upon which said clencher rings are supported, a plurality of sectional key-blocks having cups formed thereon, said key blocks having screws passing through the felly whereby the casing is expanded and retained in the clencher rings, and means interposed between the interior surface of the casing and the key blocks whereby the casing is resiliently supported, said means including a non-inflatable filler and a cushion support therefor, said filler having a centrally disposed web on its interior, and said support being inclosed by a key block cup and having a channeled portion to receive said web edgewise.

1,018,027. Resilient Tire for Wheels of Motor Vehicles, etc. Henry M. Bagdigan, Worcester, Mass. Filed Sept. 29, 1911. Serial No. 651,975.

1. A metallic spring tire of the character described; comprising an oppositely flanged circular rim adapted for fitting upon the periphery of the wheel, a series of yieldable resilient sections forming the circumferential exterior thereon, each section composed of a seat member or resistance-plate, a pair of connecting bolts secured in the end of said plates and respectively sliding through holes in the flanges of said rim, coil-springs arranged on said rods for sustaining the resistance plate, an arched bow-spring beneath the edges of the adjacent plate members, a radially yieldable outer shoe inclosing the said parts, a crescent-shaped elastic cushion between the resistance seat plate and shoe, and means securing the outer shoe and plate together and affording yielding action thereof.

1,018,030. Vehicle Lamp. Charles L. Betts, New York, N. Y., assignor to R. E. Dietz Company, New York, N. Y. Filed Nov. 11, 1910. Serial No. 591,799.

1. The combination with an oil pot having an attaching ring secured thereto and provided with outwardly-projecting attaching lugs, of a lamp body having a flanged attaching collar provided with openings for the passage of said lugs, a spring catch secured to said collar, projecting into the same and engaging one end of one of said lugs, and a stop in said collar engaging the opposite end of said lug, substantially as set forth.

1,018,044. Muffler. John T. Gilmer, Florala, Ala. Filed June 26, 1911. Serial. No. 635,495.

1. A muffler comprising a pair of tubular members adapted to be secured to the exhaust pipe of an engine, and a series of nozzles extending toward each other from the opposed surfaces of said tubular members.

1,018,049. Resilient Tire. Melancthon Hanford and Daniel Lee Taylor, Malden, Mass.; said Hanford assignor to said Taylor. Filed Aug. 16, 1910. Serial No. 577,428.

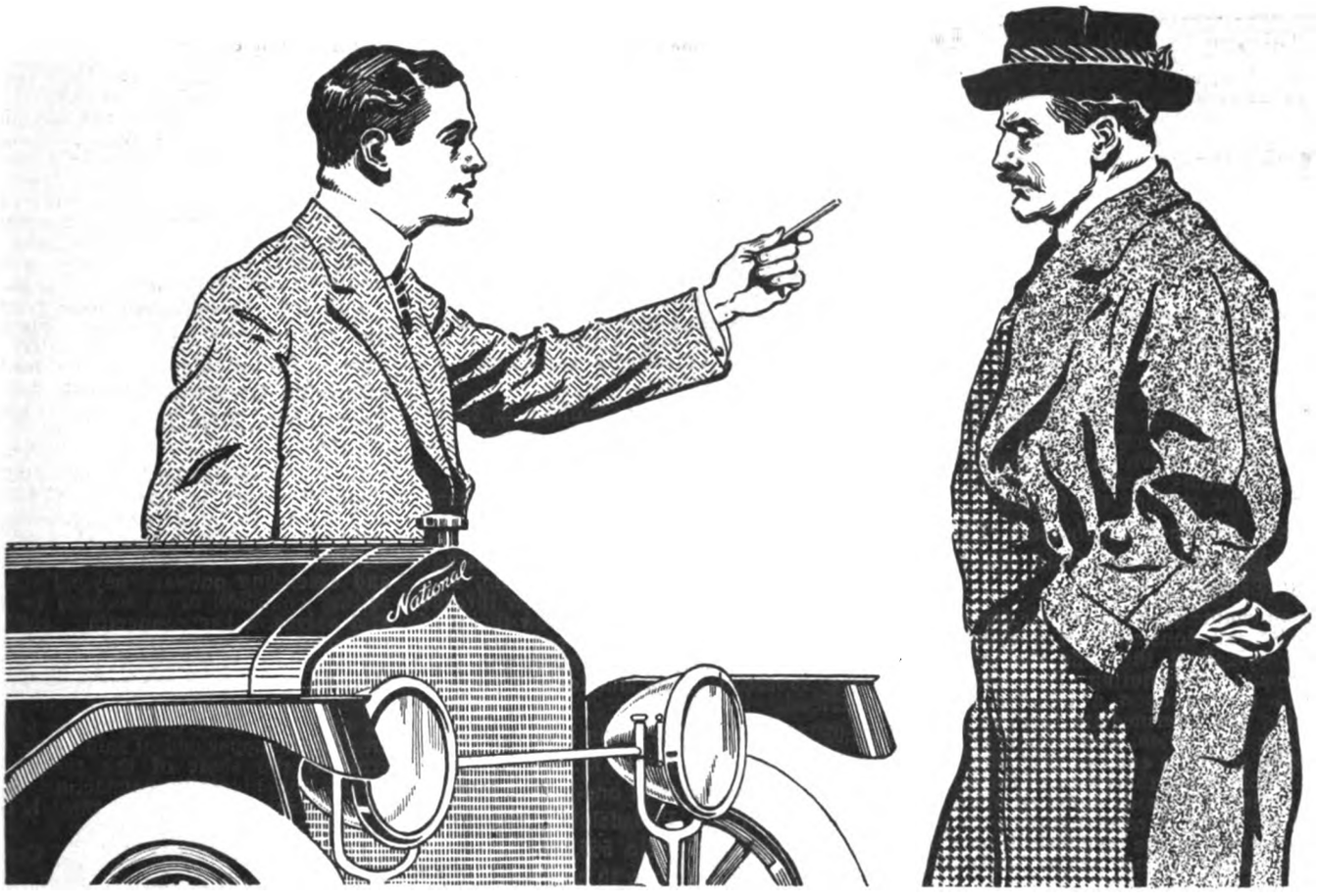
In a wheel, the combination with a wheel rim, of an annular base piece encircling the rim and having concaved sides, a plurality of load supporting arches, each having its sides curved to fit the curved sides of the base piece, a wear envelop encircling and inclosing the arches, bolts passing through the base piece and the edges of the envelop for securing the latter in position, said bolts each having a male and a female section having screw threaded engagement with each other within the base piece, clamping rings extending around the base piece and having convex sides to fit the concave shape of the load-supporting arches, bolts extending through the base piece, arches and rings and clamping the parts in position, and means associated with the last mentioned bolts and co-operating with the wheel rim to prevent creeping of the tire.

1,018,052. Motor Vehicle. Charles Limon Hemenway and Frank William Updegrag, Covelo, Cal. Filed May 24, 1910. Serial No. 563,230.

In a device of the class described .an axle; a tubular member mounted for rotation upon the axle; a movable axle end; a

(Continued on page 38.)

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You Can Look a Man in the Eye When You Sell the

National

If We Can Prove This, Are You Interested?

We say that the National is superior to any other car in actual worth that sells for the same price—we go further and say that we give you as much service and quality as any $5000 car.

We say that money can not buy better materials than used in the National—that the National has the most flexible motor—the most perfect oiling system—the greatest degree of luxurious upholstery and comfort—and we say that the National is a money-making car for dealers because of its merits and reputation. Don't you think you should at least investigate our claims?

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Long stroke (4⅞ x 6) flexible and noiseless Motor with enclosed valves.
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Adequate baggage carrying Compartment concealed in body but easily accessible.
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Tire Pump, integral part of the motor.
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Full floating Rear Axle.
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(Continued from page 36.)

wheel upon the axle end; a plane upon the inner end of the hub of the wheel, the plate being provided with openings; a plate upon the tubular member, provided with a peripheral flange; a brake engaging the flange; fingers upon the last named plate, the fingers being located between the tubular member and the flange, entering, removably, the openings in the first named plate; connections between the axle and the movable axle end, located between the plates; and means for rotating the tubular member.

1,018,085. Automobile Fender. Oscar A. Seppala, Chicago, Ill. Filed July 26, 1911. Serial No. 640,639.

1. The combination with an automobile, of a fender therefor comprising a casing, and a back portion and ground engaging portion containable within said casing, said portions including spring operated lazy tong levers for opening the fender.

1,018,093. Internal Combustion Engine. Oliver C. Blair, Cleveland, Ohio. Filed Jan. 14, 1910. Serial No. 538,097.

1. In an engine of the character described, a cylinder unit consisting of a cylindrical casing provided at the ends thereof with enlargements constituting flat bottomed chambers resting upon a foundation and supporting the intermediate cylinder body above such foundation, said chambers communicating with the ends of the cylindrical bore and combining therewith to form mixing chambers, and heads mounted upon the ends of the unit; in combination with pistons operating in the cylindrical bore of the unit and having stems extending through the heads thereof.

1,018,104. Gas Burner Attachment for Vehicle Lamps and the Like. John Ferguson, New York, N. Y. Filed Dec. 13, 1911. Serial No. 665,428.

1. A gas burner attachment for oil burning vehicle lamps and the like, comprising a spring clip consisting of separable spring jaws adapted to embrace between them the flame guard of an oil burner and a gas conduit secured to said clip and having an upright terminal portion, and a burner tip fitted to the mouth of said terminal portion.

1,018,118. Dumping Motor Vehicle. George W. Lally, Boston, Mass. Filed July 16, 1910. Serial No. 572,319.

1. A dumping motor vehicle, comprising a pivotally mounted load carrier, an elevating screw having threaded engagement with one end thereof, gearing for operating said screw, and a pivoted bracket support for said gearing and the lower end of said screw, said support having an upward projection to fit into a stocket in the lower end of the screw to provide a grit-shedding bearing.

1,018,119. Auto Garbage Truck. George W. Lally, Boston, Mass. Filed Feb. 28, 1911. Serial No. 611,456.

1. An apparatus of the kind described, comprising a vehicle framework having its rearward portion offset downwardly adjacent the rear axle, laterally offset portions fixed to the framework and extending rearwardly, and a receptacle body mounted on horizontal pivots and having support on laterally offset rearwardly extending portions.

1,018,126. Carburetter. William E. Nageborn, Detroit, Mich. Filed May 3, 1909. Serial No. 493,552.

1. In a carburetter, a reservoir, a chamber, a passage communicating with said reservoir and chamber, a valve in said chamber adapted to close one end of said passage and having a cavity formed therein, said chamber being provided with screw threads in its walls, a perforated screw-threaded plug engaging said threads, a rod extending from said plug into the cavity in the ball-valve, substantially as and for the purpose described.

1,018,137. Double or Twin Interrupter for Ignition Systems. James M. Smith, Philadelphia, Pa., assignor of one-half to Wilson D. Craig Wright, Philadelphia, Pa. Filed May 25, 1910. Serial No. 563,239.

1. The combination with a magneto generator of a twin interrupter device for controlling a magneto or normally closed circuit and a battery or normally open circuit, comprising a carrier-plate, a contact means for said magneto circuit supported upon said carrier-plate, a contact means for said battery circuit supported upon said carrier-plate, means for pivotally supporting upon said carrier-plate an interrupter member provided with two interrupter arms, one arm normally contacting with said magneto circuit contact means, the other arm normally disengaged from said battery circuit contact means, and means, connected so as to rotate with the armature of said magneto generator, for engaging said interrupter member to oscillate its interrupter arms to break the magneto or closed circuit and close the battery or open circuit in a single movement of said interrupter-member, substantially as and for the purposes set forth.

1,018,154. Apparatus for Controlling Lights on Automobiles. John L. Beck, Springfield, Mass. Filed Feb. 18, 1911. Serial No. 609,281.

1. In a lighting system for automobiles, the combination with a gas supply tank, a burner within a lamp of the automobile, a pipe leading from said tank to said burner, a valve located in said pipe and comprising a plug having a port of large capacity and a port of smaller capacity therethrough, and electrical means controllable from the seat of the automobile for moving said plug to bring either of said ports into communication with said pipe at will.

1,018,164. Carburetter. Francis A. Chapin, Indianapolis, and William Y. Chapin, Muncie, Ind., assignors to The Chapin Manufacturing Company, Indianapolis, Ind., a Corporation. Filed Jan. 7, 1911. Serial No. 601,414.

1. A carburetter including a carburetting chamber which is substantially U-shaped and has an air intake and a mixture outlet, an air intake valve, a throttle valve, a shaft on which each of said valves is mounted and extending outward beyond the carburetting chamber, arms secured to each of said valves, a bar connecting said arms, a fuel nozzle entering the lower part of the carburetting chamber, a valve extending through the top of the carburetting chamber between the air intake and mixture outlet and projecting down to the nozzle, an arm on the upper end of said valve, another arm on the shaft of the throttle valve, means for pivotally connecting said two last mentioned arms, and a throttle lever on the shaft of the throttle valve.

1,018,196. Automatic Switch. Carlton L. Kennedy, South Braintree, Mass., assignor to The Holtzer-Cabot Electric Company, Brookline, Mass., a Corporation of Massachusetts. Filed Dec. 13, 1909. Serial No. 532,803.

1. An automatic switch, having, in combination, a base, a fixed contact member and a movable rigid contact member mounted thereon, one of the contact members being provided with a sliding-contact surface adapted to engage the other contact member, the moving contact member having direct mechanical connection with the base so as to be actuated by the rotation thereof, and such connection having provision for movement of the movable contact member, by centrifugal action, both in a direction to secure sliding engagement between the sliding-contact surface and the co-operating contact member and in a direction to cause the movable contact member to slide beyond and disengage the fixed contact member.

All Tire Manufacturers will only guarantee their product when filled with air at the recommended pressure.

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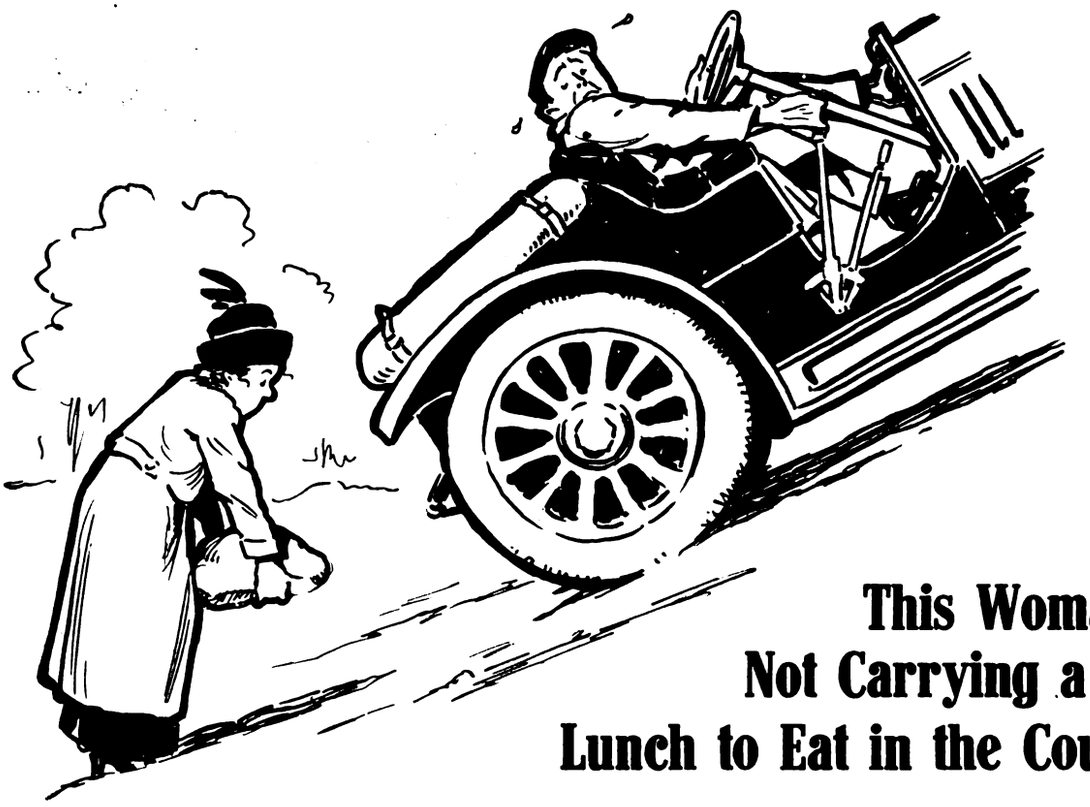
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No, it is a nice, heavy rock to block the wheels of the stalled car so her husband may take his foot from the brake long enough to get out and crank up again.

And this particular woman had to "hoof it" to the bottom of the hill in sticky mud before she found a stone large enough, then back up again.

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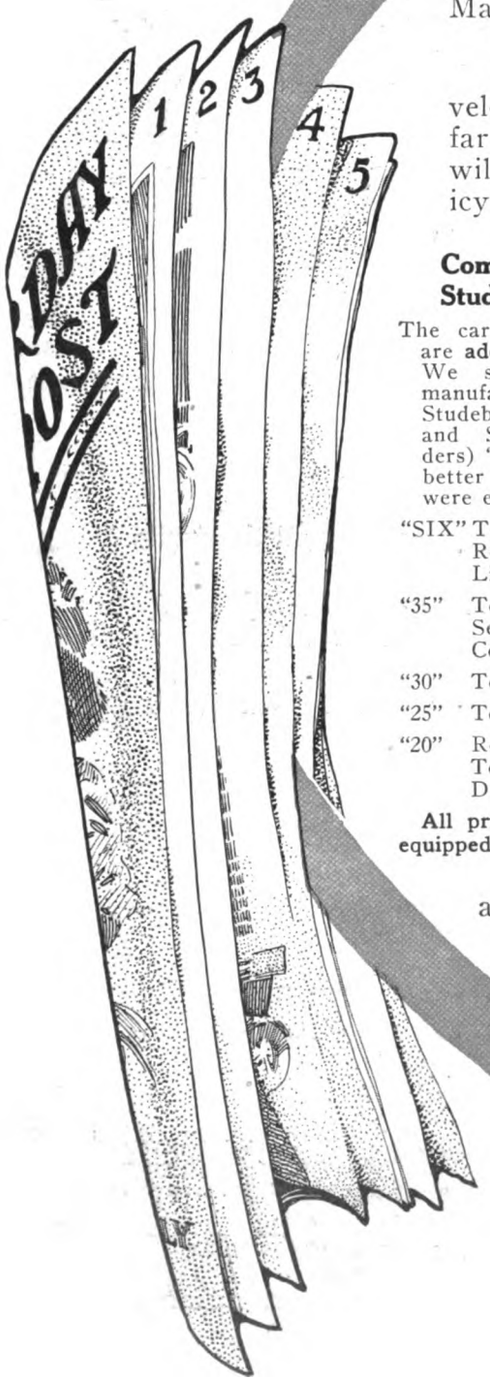
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Studebaker

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The cars shown on the opposite page speak for themselves. Make your own study and comparisons.

Where will you find equal values?

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Complete List of Studebaker Cars

The cars here announced are **additions** to our line. We shall continue to manufacture the famous Studebaker (E-M-F) "30" and Studebaker (Flanders) "20," than which no better cars of their class were ever built.

"SIX"	Touring Car	$1550
	Roadster	$1550
	Limousine	$2500
"35"	Touring Car	$1290
	Sedan Type	$2050
	Coupe	$1850
"30"	Touring Car	$1190
"25"	Touring Car	$885
"20"	Roadster	$835
	Touring Car	$885
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All prices for cars fully equipped, f. o. b. Detroit.

The Six Passenger body on the "35" and "Six" is the important body design of the year. Four passengers, the average touring car load, are here made far more comfortable than in the ordinary five passenger car. Yet, if you choose, **six passengers** ride with ease in the new Studebaker cars. It gives an owner more than a moderate priced car ever did before.

The motor design with valves enclosed, and pump and magneto on cross shaft in front of the cylinders, gives easy access to every part of the motor. It embodies the most advanced engineering practice.

The three motors are all exceedingly quiet and with the long stroke crank shaft develop power considerably in excess of their rating.

Notice how complete is the equipment. The same care has been exercised in every detail of construction.

In their extraordinary value we are certain that the announcement of these cars will mark another mile-stone in the advance of the industry. Our year's production will be 50,000 cars, but the present demand is running proportionately far beyond that. Early buyers will be fortunate.

The name Studebaker is on these cars and explains, as no other name can, their remarkable value, and the confidence which every buyer may well place in them.

Send for Preliminary Catalogue

The Studebaker
DETROIT

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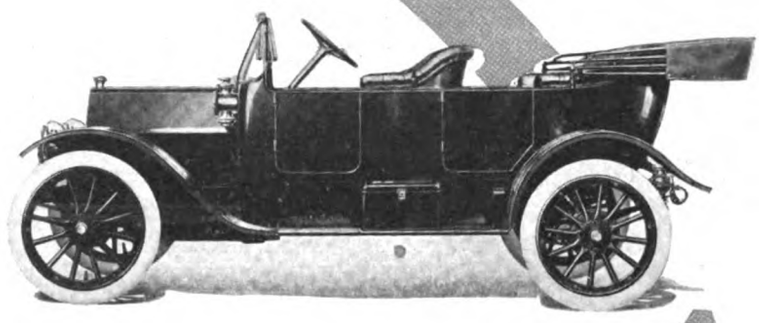
"The Great Announcement of the Year"

The $885
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Specifications

Five passenger, four cylinders, long stroke, 3½ inch bore x 5 inch stroke, 102 inch wheelbase.

30 x 3½ inch GOODRICH TIRES.
Stewart & Clark Speedometer.
Acetylene gas primer.
Studebaker Jiffy curtains.
Electric horn.
Prest-O-Lite tank.
Silk mohair top.
Full elliptic springs.
Rich upholstery, ample cushions.
Ventilating windshield.
Demountable rims.
Robe rail.
Tire holders.
Full set of tools.
Tire repair kit.
Tool box.
Extra rim.

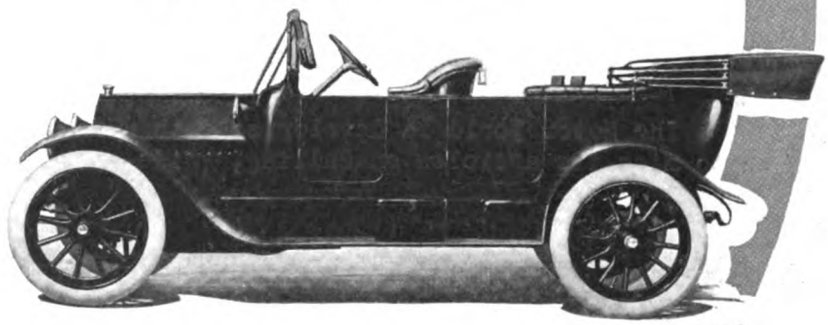


Specifications "35"

Four cylinders, 4⅛ inch bore x 5 inch stroke, 116 inch wheelbase.

Six-passenger body.
34 x 4 inch GOODRICH TIRES.
Luxurious upholstery.
Full floating rear axle.
Clear vision, ventilating windshield, rain-vision type.
Electric self-starter.
Electric lights.
Electric horn.
Deep cushions.
Silk mohair top.
Studebaker Jiffy curtains.
Detachable, demountable rims.
Stewart & Clark Speedometer.
Three-quarter elliptic springs.
Crowned fenders.
Extra rim.
Tire holders.
Full set of tools.
Wide tool box.

The $1290
Studebaker "35"

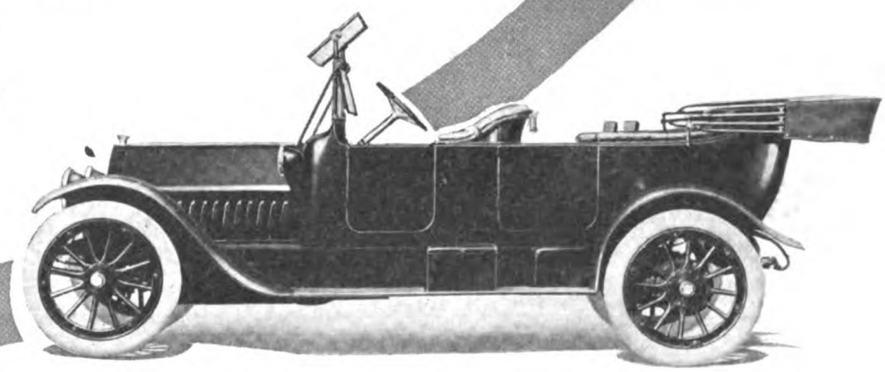


Specifications "SIX"

Six cylinders, 3½ inch bore x 5 inch stroke, 121 inch wheelbase.

Electric self-starter.
Electric lights.
Electric horn.
Full floating rear axle.
Clear vision ventilating windshield, rain vision type.
Six-passenger body.
Studebaker Jiffy curtains.
34 x 4 inch GOODRICH TIRES.
Detachable demountable rims.
Luxurious upholstery.
Three-quarter elliptic springs.
Deep cushions.
Crowned fenders.
Stewart & Clark Speedometer.
Silk mohair top.
Extra rim.
Tire holders.
Special tool box.
Full set of tools.

The $1550
Studebaker "SIX"



Corporation
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What One Manufacturer Thinks about

THE MOTOR WORLD

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SYRACUSE, N. Y. U. S. A.

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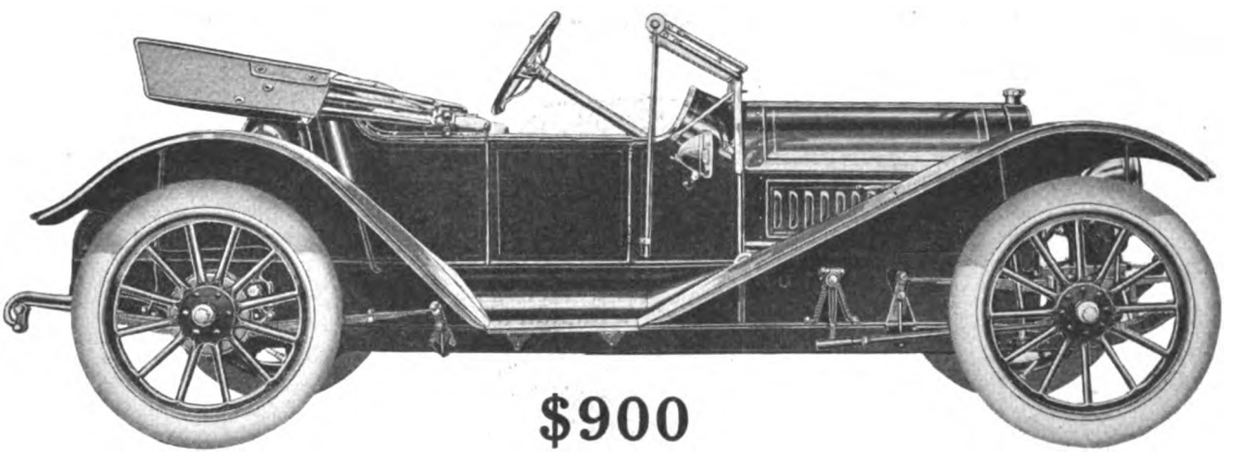
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1913 Specifications
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Wheel Base, 108 inches; Tires, Morgan & Wright, 32 x 3½ inches; Selective Sliding Gear Transmission, three speeds forward and reverse; Motor, Four Cylinders, cast en bloc; Bore, 3¾ inches; Stroke, 4½ inches; Dual Ignition; Thermo Syphon Cooling. Equipment includes nickel-plated trimmings; Electric Lights, with option of gas headlights, and Prest-O-Lite Tank; Electric Horn; Tools and Tire Repair Kit. Top, Windshield and Speedometer, $75 extra. Price, $900.

Classification

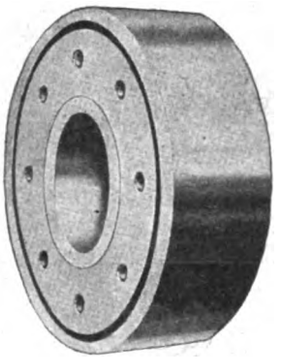
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The Regal Motor Car Co. Automobile Manufacturers **Detroit, Mich.**

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HYATT ROLLER BEARING CO.
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The *Rudge-Whitworth Wire Wheel* has been subjected to gruelling destruction tests and has been proved stronger and lighter than any artillery wheel ever used.

It was also found that the use of this wire wheel meant less tire wear, the absorption of shocks, and added beauty to the car. Adapted to any axle.

The Standard Roller Bearing Company, of Philadelphia, will manufacture RUDGE-WHITWORTH WIRE WHEELS under RUDGE-WHITWORTH patents and according to RUDGE-WHITWORTH standards. They will be equipped with the Houk Q. D. Rims for the American trade.

George W. Houk Co.

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This demand is being successfully met by the

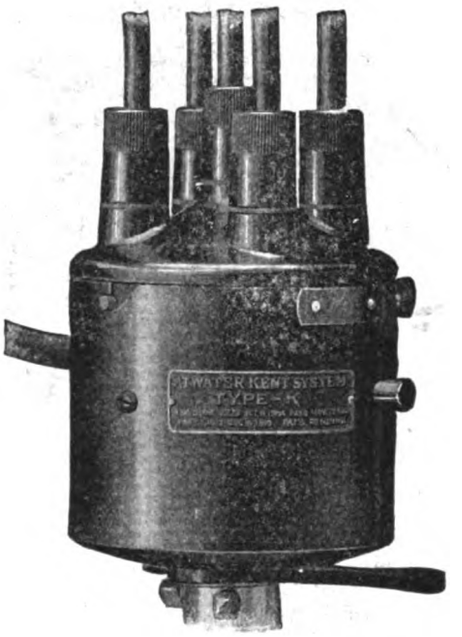
Atwater Kent Ignition System

the starting button of which produces, not a few weak sparks, but a single heavy flame-like spark, thus insuring at all times the perfect ignition of any mixture that will burn.

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high in price. In fact, it will cost less than half as much as a good magneto and will give superior results at a much less cost of upkeep.

We can now furnish two types of the Atwater Kent System for use on cars as sole ignition in place of the magneto, in conjunction with lighting and starting equipment.

***Type "F"* without Automatic Spark Control.**

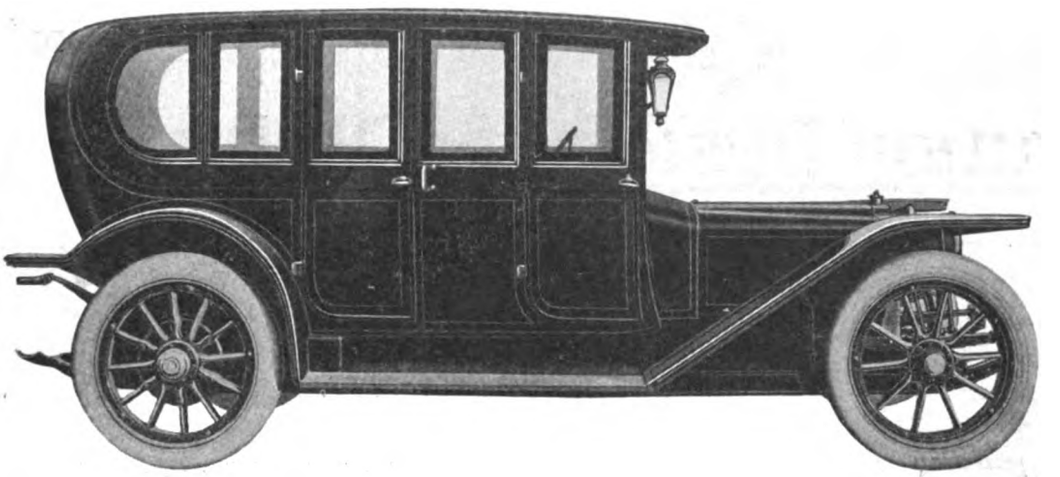
***Type "K"* with Automatic Spark Control and insulated primary circuit.**

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This newest "American Underslung" type is electrically lighted and electrically started. There is complete control from the vestibuled driver's compartment. Carburetor adjustment is provided for on the dash.

The car's mechanical operation is from the center and the drive from the left.

For the "American Traveler" Limousine a selection of any finish or upholstering shade is permitted. The interior finishings are of the finest qualities of goat skin and taffeta.

The spacious coach compartment permits four to ride in utmost comfort. There are two unusually comfortable auxiliary seats. The car's complement of passengers is five besides the driver.

To the most minute details the "American Traveler" Limousine excels. There are two glazed electrical dome lights, an electrical enunciator registering on the dash, a speaking tube, electric cigar lighter, toilet case, card case and flower vase. There are Colonial pillar lamps on the vestibule.

The "American Traveler" Limousine — which is of 50-horse power—is priced at $6,000, complete.

We will make only a limited number of this type of "American Underslung" cars. It is imperative that you make a reservation immediately. You should see the nearest American dealer at once. A postcard will bring his address.

We also want you to have our fine new catalogue, prepared in colors by well known artists. It is descriptive of the entire "American Underslung" enclosed line.

American Motors Company, Dept. E, Indianapolis, Indiana

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"The Horn that's Made for the Discriminating"

TUTO HORN

THE TWO TONE HORN

Tuto Acts Instantly.

THE value of an electric warning signal lies in its ability to give instant response when the button is pressed.

¶ The TUTO horn button may be manipulated to give a low distinct sound, or with further pressure on the same button, a signal note of increased volume and penetrating power.

¶ There can be no confusion as to which signal to use, for the same button is employed and it is natural for the driver to go to the loud signal by increasing the pressure on the button when an emergency arises.

¶ There is no inertia of revolving parts or undue friction to overcome, and the TUTO mechanism springs into instant action at its full volume, whether it be the low or loud note, without any appreciable lag.

¶ This is why the TUTO horn clears the way easily and surely, without making an extremely loud or objectional noise.

¶ By acting instantly, the horn can be sounded at close range, the signal being directed only to those immediately in the path of the car and not disturbing everyone in the neighborhood.

¶ The actual service-giving qualities of the TUTO have caused its rapid adoption and a rapidly increasing demand for the horn.

¶ Where the bulb horn is abandoned, the TUTO horn is the only device which will do all your signalling in a positive and unobjectionable manner.

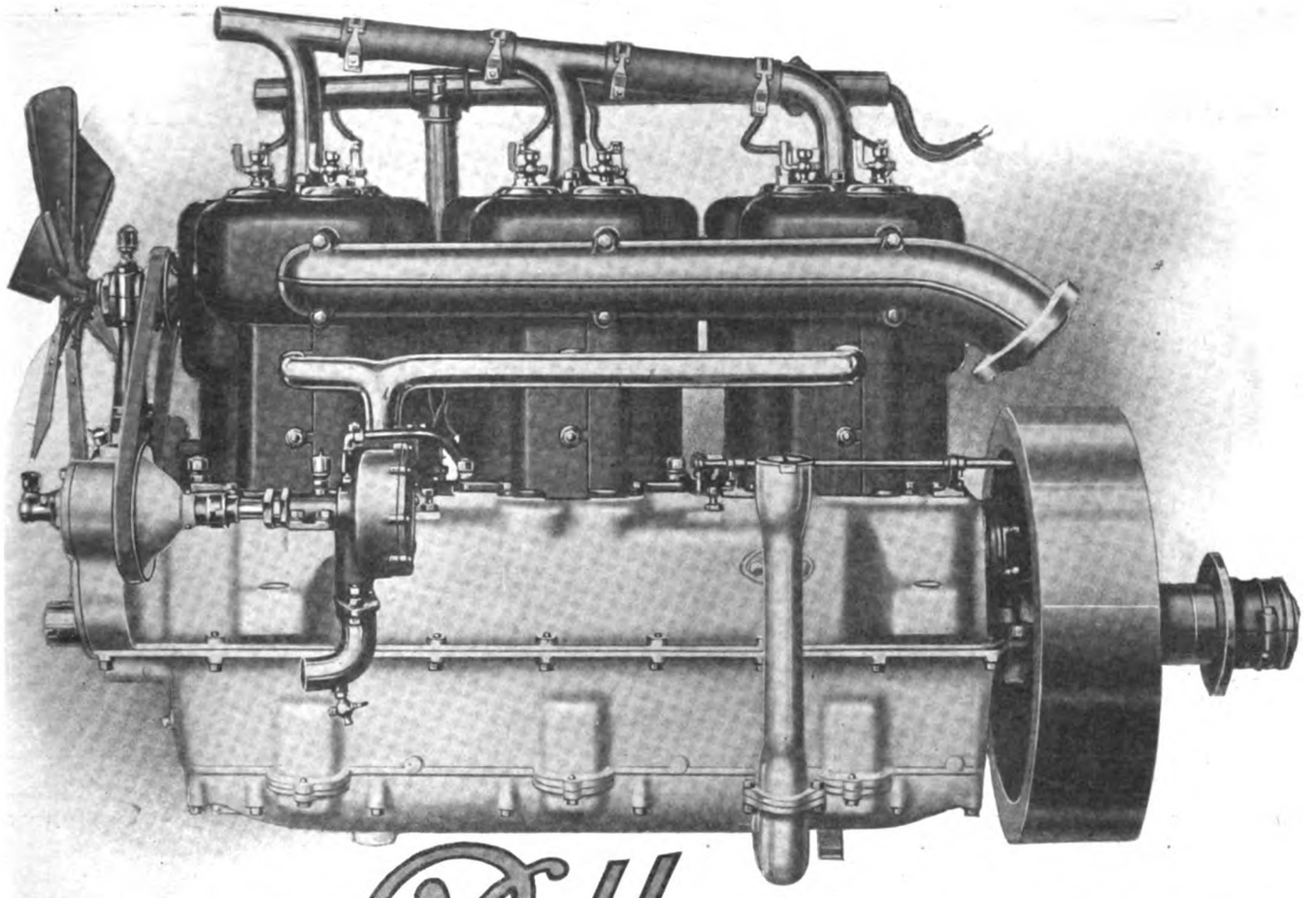
The Dean Electric Co.

260 Taylor Avenue, Elyria, Ohio

"Look for Dean where Quality's seen"

TUTO Horn, $25.00 **TUTO-ETTE $17.50**

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1913 Pullman 1913

Here is shown one of the best reasons that Pullman dealers are successful money makers—one of the best reasons why the Pullman agency is really a substantial, lasting, money-making business.

Pullman cars sell to motor wise purchasers because of their honest value and honest performance. They make good, consequently they make sales.

This illustration shows the six cylinder motor, built in our own plant—built with care and precision unsurpassed in any plant anywhere. This engine develops its rated horsepower at 1300 r. p. m. The magneto and pump are placed on opposite sides. The oil level adjustment is placed on top of the crank case so it is very easy to change the oil level. The timing gears run in oil rather than grease. The fly wheel fan works independent of the regular fan in front. All valves are enclosed. The valves are extremely large, 2⅛ inches in diameter. Electric motor starting device is included as regular equipment.

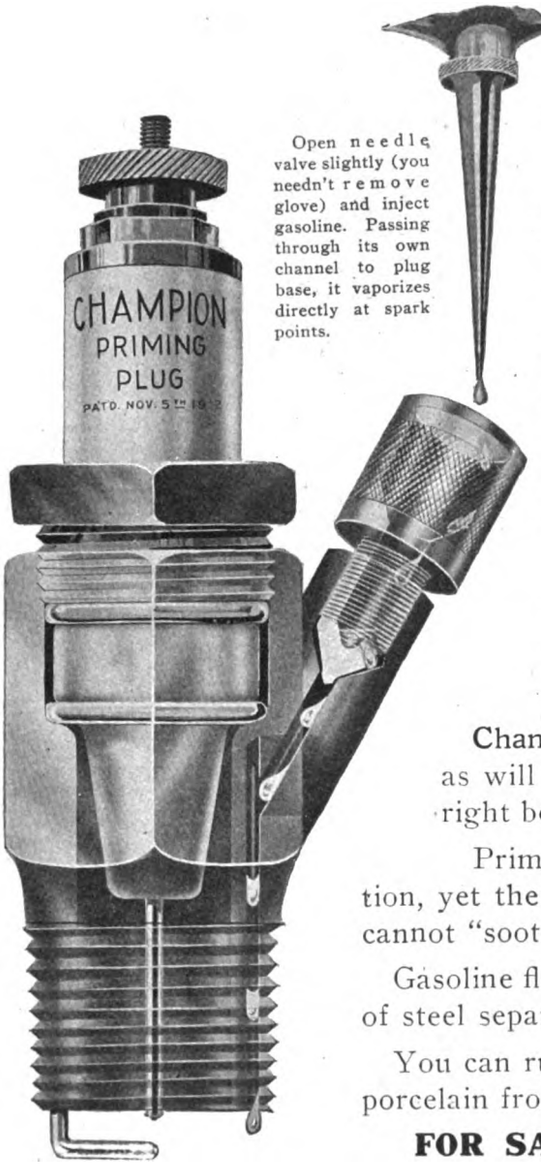
Perhaps your territory is not closed yet. If there is a chance for you to get this agency, you certainly want to avail yourself of it. At least get all the information you can about our proposition by writing today.

PULLMAN MOTOR CAR COMPANY, York, Pa.

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Every Car Owner Needs This Prime-r

It Starts Any Motor on First Quarter Turn



Open needle valve slightly (you needn't remove glove) and inject gasoline. Passing through its own channel to plug base, it vaporizes directly at spark points.

Mr. Dealer, you know that there are thousands of cars which cannot be started in cold weather without priming.

Champion Priming Plugs are absolute winter necessities on cars without priming cocks, and they are often wanted badly on cars that have such devices.

Champion Priming Plugs — new this season — splendidly supplement our standard line, which already is regular equipment on 60 per cent. of the automobiles in America.

Champion Priming Plugs, devised to fill a special field, have no rival in point of efficiency or workmanship.

Priming is readily done—just turn needle valve back a few threads by hand; inject a few drops of gasoline and close again without removing your gloves.

Champion Priming Plugs are both sure and safe, because, as will be seen by the illustration, they create vaporization right beside the spark points.

Priming cocks cannot be placed in as advantageous a position, yet the gasoline is kept away from the porcelain so that it cannot "soot-up."

Gasoline flows down to the plug base in its own channel; a shell of steel separates it from the porcelain and the electrodes.

You can run with the needle valve open without danger to the porcelain from a hot exhaust blast.

FOR SALE EVERYWHERE AT $1.25 PER PLUG

Trial Set of Four Champion Priming Plugs, Fully Guaranteed, Prepaid to Any Car Owner for $5. Give Name of Car and Year of Make—Also Name of Your Dealer.

All jobbers and most dealers are already supplied. Write today. Liberal trade discount to dealers. Be ready to supply your trade in advance of our big advertising campaign in the great national weeklies.

CHAMPION SPARK PLUG COMPANY

106 UPTON AVE. TOLEDO, OHIO

TRADE-MARK

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"Little Knox Six"

Commands Attention

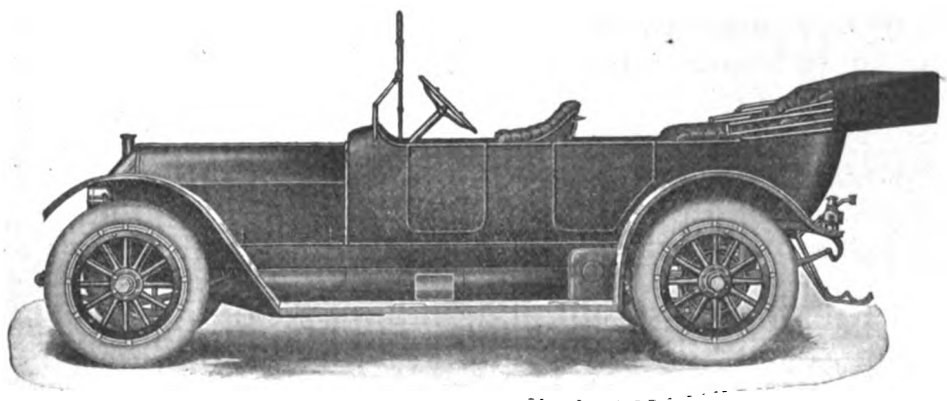
Arouses Enthusiasm

Silences Competition

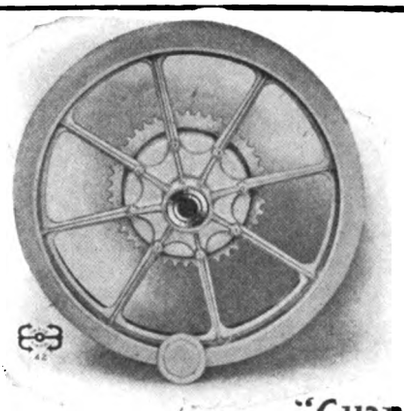
Passes them all.

Made in New England

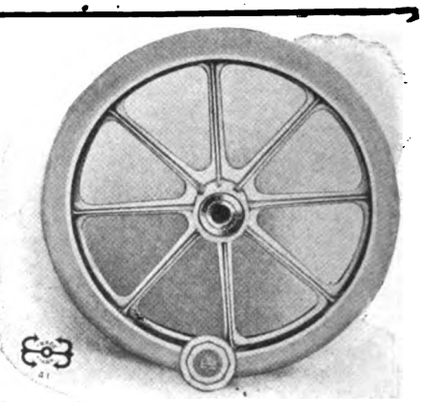
at Springfield, Massachusetts



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SHELDON STEEL WHEEL



"Guaranteed to Outlast a Score of Cars"

Even if the SHELDON Steel Wheel were no stronger, lighter or more durable than the wooden wheel, the fact remains that the proposition would still be most attractive from a manufacturer's viewpoint.

The car manufacturer who uses this wheel as part of his equipment commands the situation entirely. He is not dependent for delivery of wood wheels before he can ship the chassis, and mighty few men in this line of business have not been more or less "up against" the wheel delivery proposition.

Sheldon Steel Wheels Are Ready and Deliveries Are Made on Dates Promised—This Without Fail

These wheels cost a trifle more than the wooden wheel but this will more than even up in the added prestige they will give to the car so equipped—a prestige that will command higher prices on the finished vehicle because the ultimate user is securing an imperishable, money-saving wheel for this increase in price—add to this the fact that SHELDON Steel Wheels give an engineer's finish to a vehicle—another characteristic greatly enhancing the value of the car.

Considering that the day of the wood wheel is about over, it is pretty clearly up to truck manufacturers to get at the basic facts back of the design and construction of steel wheels. These facts will be an added asset, available with every truck building organization that is keeping up with the refinements of the day.

SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

Detroit Branch:
1215 Woodward Avenue

Chicago Branch:
68 East 12th Street

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Sell just one or two Warm Hand Wheels in your locality—they'll sell dozens more for you without effort on your part.

¶ With the refining of motor cars—as now demanded by a discriminating public that must be sold—naturally comes the question of heating the driver and the car.

¶ With this question comes the Warm Hand Wheel as the solution of the problem of keeping the person driving the car warm and comfortable, six months of the year.

¶ The Warm Hand Wheel is a device or steering wheel heated by the electricity supplied either by a storage battery or electric lighting or starting outfit. It can be put on any car with the greatest of ease and at the slight cost of $15 retail.

¶ On Ford cars this Warm Hand Wheel is operated by the magneto inbuilt in Ford fly wheels. It operates perfectly with this source of current without affecting in any way the magneto in the performance of the functions for which it is built.

¶ Really you can sell a raft of these Warm Hand Wheels in your territory right now. Remember they are necessary in most of the country for six months out of twelve—that is during both fall and spring as well as in the hard winter weather. Maybe your territory isn't closed yet. Write today and find out.

THE WARM HAND STEERING WHEEL CO.

527 Fifth Avenue **NEW YORK CITY**





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SPRINGFIELD
CONVERTIBLE BODIES

Springfield Convertible Bodies are the embodiment of refinement in the matter of lines, material, finish and ease of adjustment.

The runabout convertible body shown here illustrates one extreme of a line that goes on up to the highest grade limousine, landaulet and town car.

Even this faithful reproduction cannot approximate the beauty and convenience of the equipments as they actually appear. They must be seen to be fully appreciated.

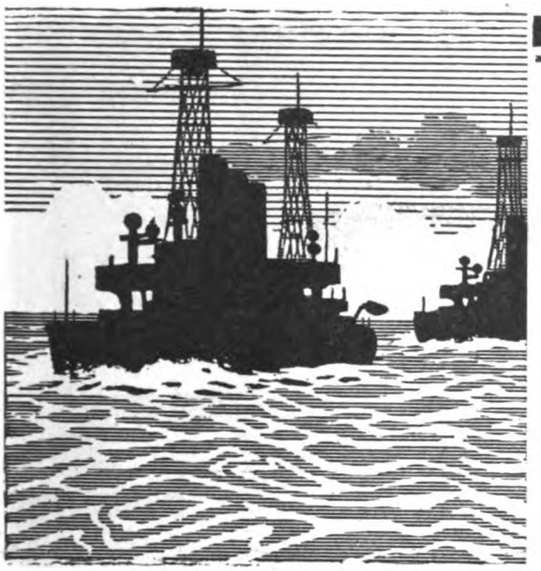
The ease of operation is remarkable; the tops are rapidly raised into position, the doors are opened, the hinged glass swung up into position, the remaining windows are removed from a box in the back of the front seat and buttoned into position, completely enclosing the car in less time than an ordinary top can be erected and the curtains adjusted.

Write for brochure of reproduced photographs.

SPRINGFIELD METAL BODY CO.
Springfield, Mass.



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THIS IS THE BEST SYSTEM

THE Ward Leonard System of control has caused two distinct demands in the automobile industry:

1. The universal use of electricity for the lighting and starting systems.

2. A system that year in and year out for the life of the car shall need no attention. The system must be *automatic*—must be an *electrical* control of the electric circuit, not a mechanical control of the electric circuit.

Roosevelt witnessed this test

The turret guns, weighing many tons, on the United States dreadnoughts are operated, raised, aimed and lowered by a Ward Leonard system of control.

The value of the Ward Leonard System of control was demonstrated in battle during the Spanish-American war, where it was used upon the "Brooklyn." Prior to that time it had been installed experimentally upon the "Brooklyn," but a controversy had developed between the line and staff officers as to the advisability of using electricity for that purpose.

Theodore Roosevelt was then Assistant Secretary of the Navy, and in his presence the United States armored cruiser "Brooklyn" was thoroughly tested with one turret operated by the old method and one by the Ward Leonard system, which resulted in the general adoption of the Ward Leonard System in the United States Navy. The immense superiority of the Ward Leonard control was shown when the "Brooklyn" was in battle. A turret equipped with the Ward Leonard System can be so accurately controlled that a shot fired at an object 2,000 yards away can be moved only two inches in either direction.

Since the Spanish War the Ward Leonard System has been generally adopted by the United States Navy and all the ships are equipped with it, with a few unimportant exceptions.

Here is one place above all others where there is no room for a system of control that is not perfect in every detail of design and of the maximum efficiency in operation.

The same engineering service giving "systems of control" that is found good enough for the leading navies of the world "is not too good for the leading automobiles of this country."

It's a great step forward when automobile engineers reach a government standard of quality and service in the electrical field.

No adjustments necessary

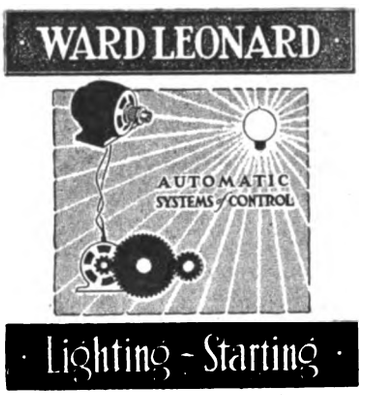
But the advantages of the Ward Leonard System do not stop with automatic control and thorough reliability. Its simplicity and the absence of any adjustments will make it valuable to the car owner as well as to the car manufacturer.

There are no unnecessary parts—nothing to puzzle the operator, and any chauffeur can easily understand the construction and performance of the dynamo and the entire system.

Automatic control the feature

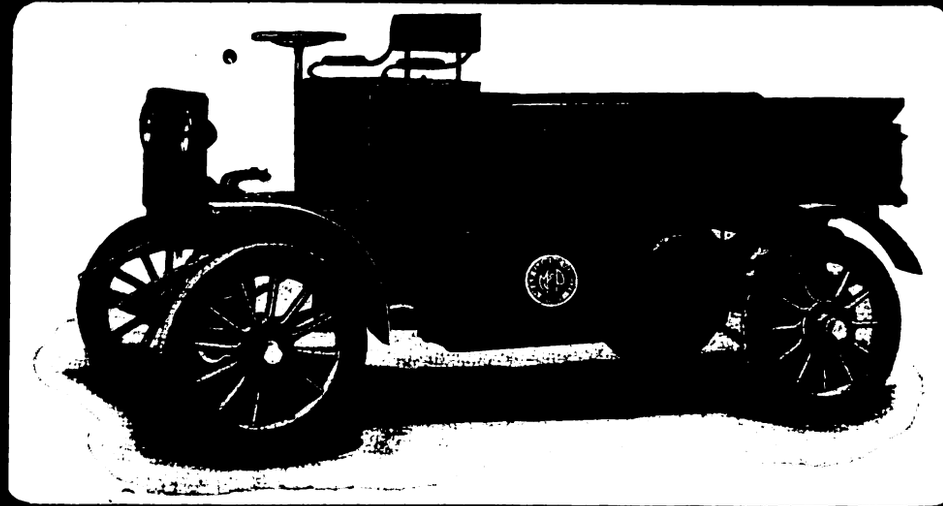
The Ward Leonard System is automatically perfect. That a control be truly automatic, it must be made of such parts and materials as shall not change in their capacity to carry electricity. They shall not wear, they shall not be altered in any way due to heat, cold, vibration, etc. Only in that way can be obviated the necessity of resetting and adjusting. So to be truly automatic, the control shall need no attention whatever by the user.

Day does not follow night with any more certainty than the electrically operated switch controls the charging amperes in the Ward Leonard System regardless of the speed of the motor.



WARD LEONARD ELECTRIC COMPANY
BRONXVILLE N. Y.

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The M & P One Thousand Pound Electric Truck Comes to Your Customer, Mr. Dealer, With an Iron-Clad Guarantee Back of It.

This guarantee covers every possible angle, protecting you and the buyer in the matters of reliability and economy of operation.

The M & P One Thousand Pound Electric Truck is the first electric truck of its quality to be sold at M & P prices. And because of long experience, and low overhead we are producing a vehicle which will positively give more and better service at lower cost of operation than can any other electric truck selling for as high as $2,200.

Comparison with the gasoline truck is unnecessary. We are selling electric trucks whose advantages are obvious.

A Truck That Makes Good at a Price That Sells It

The M & P Truck is the acme of simplicity—strong, sturdy, reliable and economical. In a word, it is properly designed and properly built. It is "Made to make good and it does." Tests prove that the cost of operation is twenty-five to thirty-three per cent less than that of a similar powered gasoline car.

A point that will also appeal to your trade is the price. It puts the high grade electric delivery wagon within the reach of the average retail merchant, who is, at present, utilizing horse-drawn vehicles for transportation purposes. We have the facts and data to prove to you and to such a merchant that the "M & P" can save him a surprisingly large amount of money.

You, Mr. Dealer, have studied the electric commercial proposition—you know that the trade is hungry for it. You don't have to go to the big manufacturer to sell this truck. You have but to present it to the dry goods merchant, the hardware man, or any other merchant with a delivery problem, to prove there is a waiting market.

Get the facts and figures covering this proposition, including complete description of the M & P and our liberal commission to you. Find out how and why it will pay you to get busy now.

M & P ELECTRIC VEHICLE COMPANY

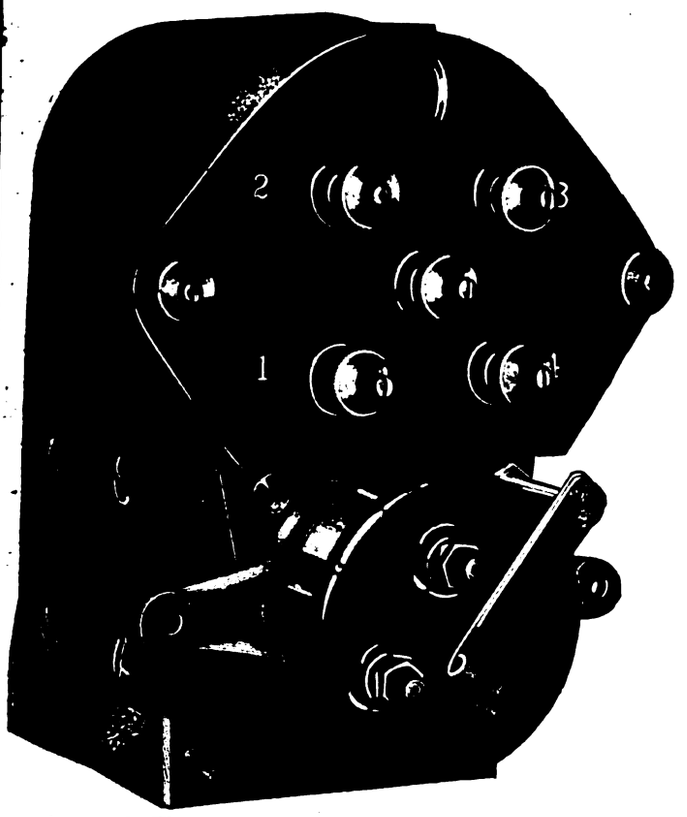
Franklin aud Dubois Streets **Detroit, Michigan**

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EISEMANN

Eisemann products add distinction as well as efficiency. Eisemann equipment on any car carries with it the general idea that the manufacturer thereof is honestly supplying his product with the finest ignition system that money and brains can produce—with an ignition system back of which is the labor and experience of the pioneer ignition systems for internal combustion engines.

All of the unexcelled points of efficiency in Eisemann products are the logical result of step by step development from the crude systems first used in 1903. Nothing is freakish or uncertain. Everything is mechanical and electric onward progress. That's one reason why no ignition system today is so efficient, so durable, so simple and so accessible as the Eisemann systems of ignition.



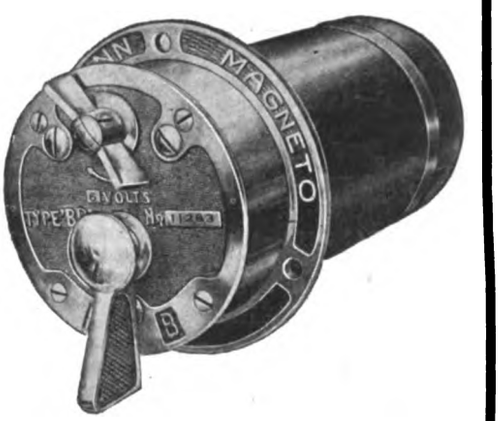
The new Type E. B. High Tension System with separate transformer coil (illustrated herewith) places upon the market an ignition system that is low in cost yet remarkably high in efficiency—but up to the Eisemenn standard in every respect. This system, which is simply an addition to our now complete line of ignition systems, consists of a magneto in which only the primary current is generated and a separate transformer coil in which the current is stepped up to its high tension.

The Eisemann Magneto Co.

Sales and General Offices:
225-227 W. 57th St., New York City

Indianapolis:
514 N. Capitol Ave.

Detroit:
6 Goldberg Bldg.



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Prest-O-Starter

Starts your engine (old or new) quickly and easily in coldest weather.

For Four Cylinders $20

For Six Cylinders $25

$1.50 extra for two-way valve necessary when the same tank is used for both starting and lighting.

Here's a starter that adds practically no weight to your car, is perfectly simple and is as durable as the engine itself. Easily applied to any engine, old or new, very economical in the use of gas, and requires no expert repairing.

How Prest-O-Starter Works

The principle of starting a motor with Prest-O-Starter is the same as "starting on compression." A measure of acetylene, at low pressure, is pumped from your Prest-O-Lite Tank into the cylinders.

Touch your spark—your engine starts.

Unlike "gasoline priming" it is not affected by heat or cold. It is certain.

In cool weather, by opening a valve on the dash, you can feed gas at low pressure into the intake manifold. This allows your engine to run on acetylene until it is warm enough to run on gasoline.

If the Prest-O-Starter did no more than prime your engine in this way during cold weather, this convenience would be well worth the price.

But Prest-O-Starter is more than a primer. When installed properly, it will start your engine, summer or winter, almost invariably without recourse to the crank.

Make Sure Your Starter is Installed CORRECTLY—Look It Over

The Prest-O-Starter is easy to install correctly. In fact, it's so very easy to install that some good factories and garages install it with utter carelessness, overlooking the one or two simple features vital to success in operation. Fortunately this is an easy matter for the car owner to correct, even if he isn't a mechanic.

Our literature tells you exactly how the Prest-O-Starter is installed, and how to adjust it. Anyone can give it the slight attention it may need or quickly tell a dealer where the trouble lies.

Every Prest-O-Starter is sold with the assurance of satisfactory service. The entire Prest-O-Lite Organization is back of every one. If you have any trouble, report it to us or our nearest branch. We'll wipe it out quickly.

Insist Upon GETTING the Outfit COMPLETE

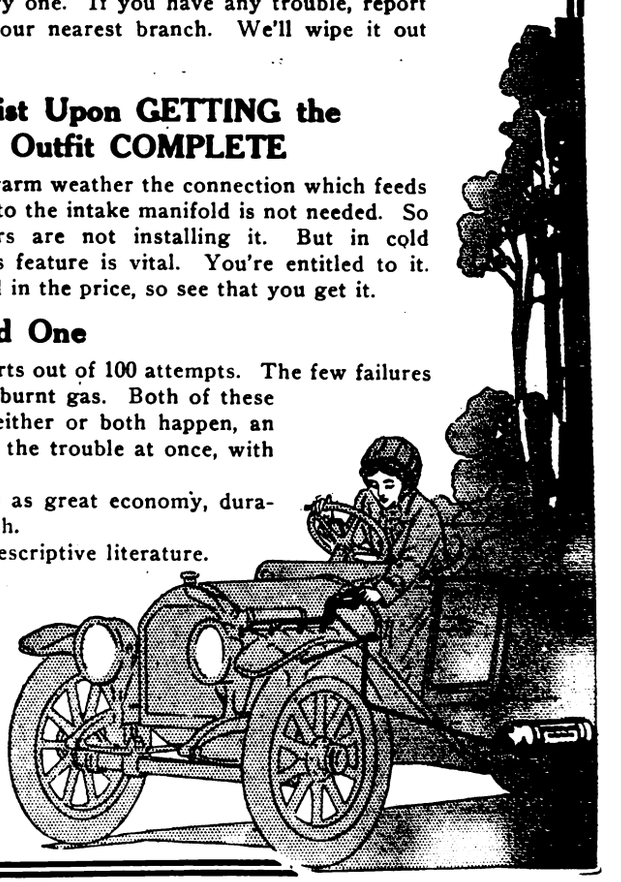
During warm weather the connection which feeds acetylene into the intake manifold is not needed. So some dealers are not installing it. But in cold weather this feature is vital. You're entitled to it. It's included in the price, so see that you get it.

Now More Than Ever You Need One

Your Prest-O-Starter, properly installed, will average better than 95 starts out of 100 attempts. The few failures are caused by your motor stopping on dead center, or cylinders filled with burnt gas. Both of these conditions can be easily avoided when stopping your motor. But should either or both happen, an eighth or quarter turn of the crank, with the switch at neutral, will remedy the trouble at once, with all of the danger and labor of cranking eliminated.

Rest assured that no other starter can give you as high efficiency with as great economy, durability and freedom from mechanical trouble. The price is within easy reach.

Get in touch with any of our branches—or your dealer—or write us for descriptive literature.

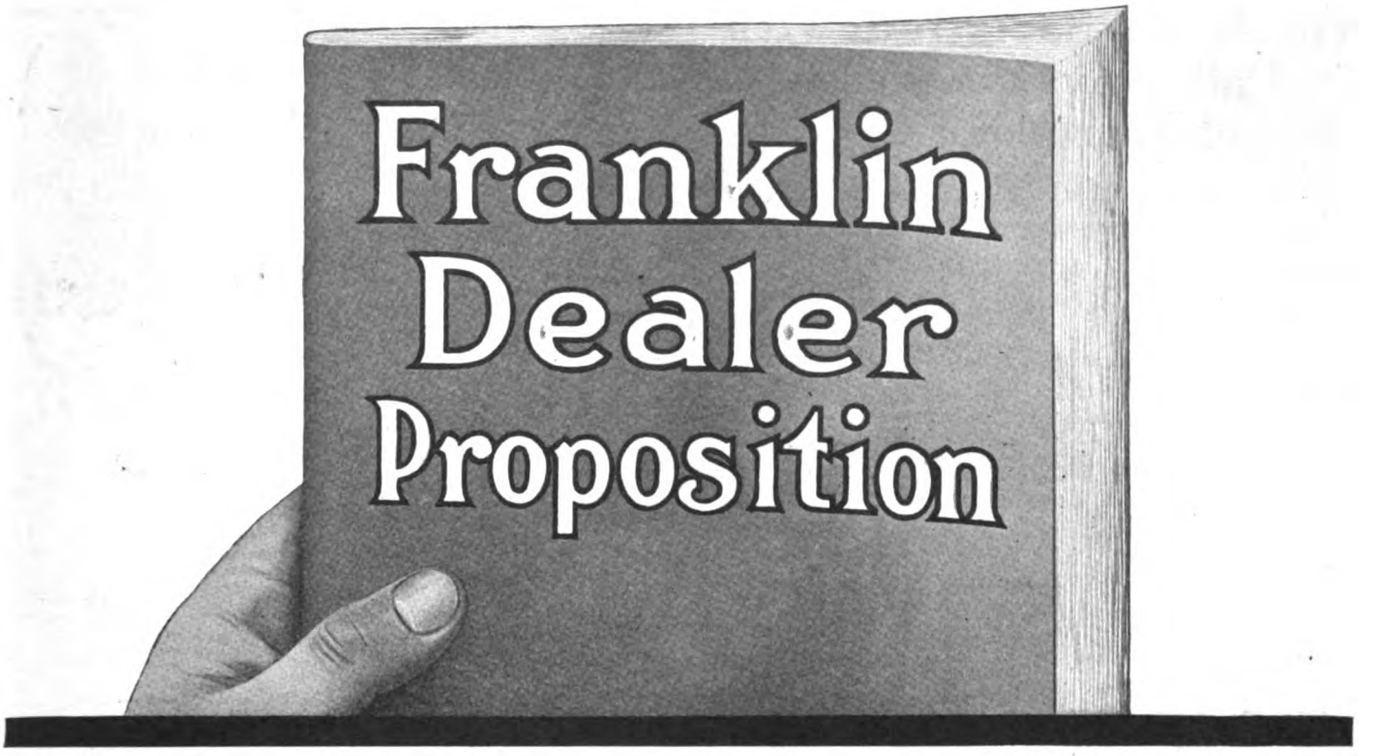


The Prest-O-Lite Co. 287 E. South St. Indianapolis, Ind.

BRANCHES—Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Memphis, Tenn., Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Portland, Ore., Providence, St. Louis, St. Paul, Minn., San Antonio, San Francisco, Seattle, Syracuse, Merritton, Ont., Toronto, Ont., Winnipeg, Manitoba.

Exchange Agencies Everywhere

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Send This Dealer Application

No matter what cars you *now* handle—get the Franklin Dealer Proposition. Franklin is now the third largest selling high priced car, and gaining rapidly on second.

Franklin cars are easy to sell because they (1) use less gasoline, averaging 20% to 35% more mileage per gallon; (2) use less oil, averaging 400 to 600 miles per gallon, without smoke; (3) use fewer tires, averaging 8,967 miles per set, the 1911 record; (4) travel faster in the long run, owners thinking little of making 200, 250 and 300 miles and more per day, without fatigue; (5) ride easier, bowling along so smoothly and comfortably, without jolt or jar, that driver and occupants do not realize that they are steadily traveling 30, 35, and 40 miles per hour; (6) and wear longer than other cars, many Franklin cars giving their owners continuous satisfactory service for 5, 6, 7 and 8 years.

We will send full particulars of the Franklin Dealer Proposition to any automobile dealer, garage owner or automobile owners financially capable and with the business experience to become a successful dealer, provided he will mail us this "dealer application" immediately.

The sending of this application does not obligate the sender or us. It is merely a convenient way to get at the facts.

THE FRANKLIN LINE

D Touring, 6 cylinder, 38 h. p., 5 passengers $3500	M Little Six, Thirty, Touring, 5 passengers $2800
D Torpedo-phaeton, 6 cylinder, 38 h. p., 4 passengers..... $3500	M Little Six, Thirty, Victoria-phaeton, 2 passengers..... $2800
H Touring, 6 cylinder, 38 h. p., 7 passengers $3750	G Touring, 4 cylinder, 25 h. p., 5 passengers $2000
H Limousine, 6 cylinder, 38 h. p., 7 passengers, 5 passengers inside.. $4750	G Runabout, 4 cylinder, 18 h. p., 2 passengers $1650

The six cylinder models equipped with Entz Electric Starter and Lighting System. A real starter with really original features.

FRANKLIN AUTOMOBILE COMPANY
Syracuse, New York

DEALER APPLICATION

FRANKLIN AUTOMOBILE CO., Syracuse, N. Y.

Without obligating me please send your "Dealer Proposition" as advertised in November 14 issue Motor World.

Name .....

Address .....

Available Capital .....

References
1 .....
2 .....
3 .....

I handle the following cars:

.....

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Don't be Satisfied with Half-Way Knowledge of Your Motor-Car

First, get at the fundamentals—the big, construction features that mean strength, safety, speed, power.

Here's one of the big things you ought to know about:

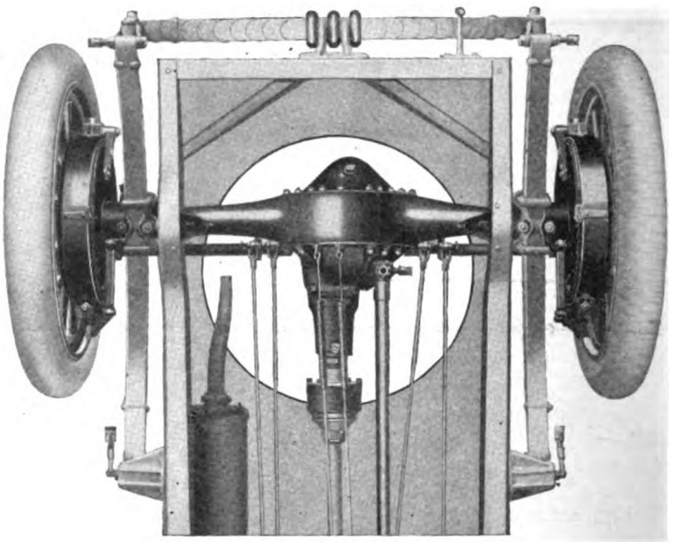
The Power-Transmiting Unit of a Timken-Detroit Rear Axle.

It's shown at the right just as you see it when the body of the car is removed and you look down on the chassis—lower on the page you see it in detail.

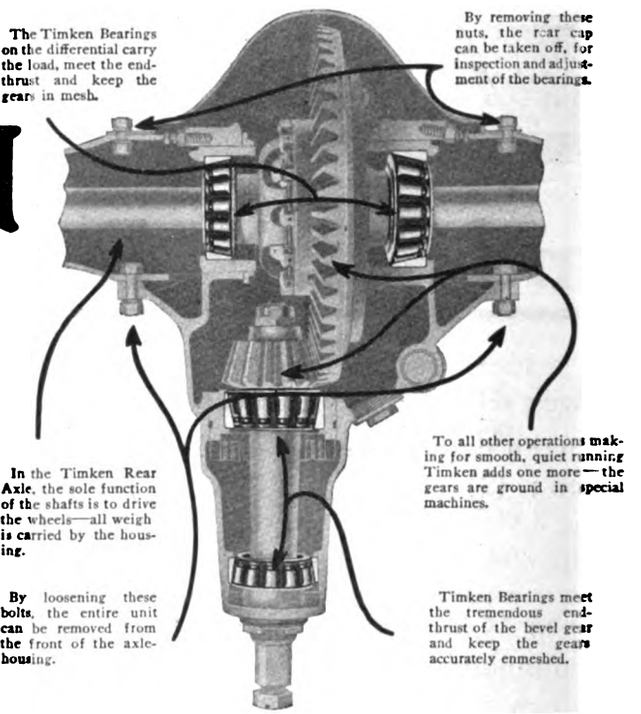
Study it—read the description carefully.

It's one of the great Timken contributions to good axle construction.

And it includes the most important single contribution to American motor-car manufacture:—Timken Tapered Roller Bearings.



Above is a picture of a Timken-Detroit Rear Axle, showing the position of the Power-Transmitting Unit illustrated in detail below.



TIMKEN
BEARINGS & AXLES

In a Timken Rear Axle all the gears—pinion, driving and differential gears—form a unit.

This unit is completely assembled and tested before it is put into the axle.

It is bolted to the front of the housing and is easily removable.

The large removable rear cap of the housing permits convenient inspection and adjustment from the rear.

The quiet running and high efficiency of Timken gears is partly due to this unit construction—proper relation of all parts is assured *before* the axle is assembled.

It is partly due to the grinding of the gears by a special Timken-built machine—*the one gear-grinding machine made* that corrects all the microscopic inaccuracies left by even the finest gear cutters.

It is lastly and largely due to the Perfect Service given by Timken Tapered Roller Bearings.

The Power-Transmitting Unit is carried by these bearings.

They keep shafts in line and gears accurately in mesh, *saving power* and insuring quiet running.

They do this because of three great principles of Timken Tapered Roller Bearing construction.

1. A greater load capacity than balls because they carry the load along their whole length instead of on points only.
2. Greater ability to meet force from the end as well as the side—because the rollers are tapered.
3. Perfect adjustability for wear—due to the tapered construction.

Good Axle Construction Demands Human Integrity and Efficiency

It isn't merely one, or even all of its notable features that makes the Timken-Detroit Rear Axle.

It's really the human equation back of the whole.

An organization that began before the motor-car industry was dreamed of.

That for years has been devoted exclusively to building motor-car axles—and to nothing else.

Whose product represents the whole sum—not a part—of motor-car axle knowledge and experience: American and European.

The Timken story requires many chapters—this advertisement is only one.

Look for the others and read them—they will give you a new understanding of the modern motor-car.

You can get the whole story of axle and bearing importance and construction by writing to either address below for the Timken Primers, T-9 "On the Care and Character of Bearings," and T-10 "On the Anatomy of Automobile Axles."

THE TIMKEN-DETROIT AXLE CO., DETROIT, MICH.
THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

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BOSCH PLUGS

Cut Actual Size



As Good As Bosch Magnetos

WHEN a motor car is purchased the source of ignition is generally a Bosch Magneto, but other important units of the system are seldom of equal quality unless the owner insists upon Bosch Products throughout.

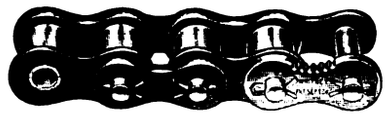
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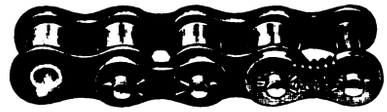
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Bosch Magneto Co., 223 W. 46th St. NEW YORK CHICAGO DETROIT TORONTO SAN FRANCISCO





WHITNEY





The Most Practical Chain for Motor Trucks



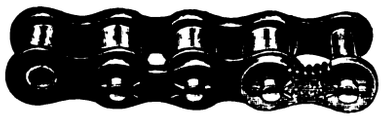
Because the "Whitney" Cotter Detachable Chain can be easily separated at any link and lengthened, shortened, or repaired without the use of any special tool. This is of great advantage to truck builders, owners and drivers.

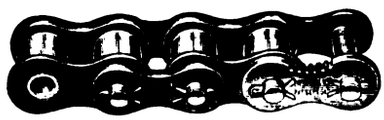
"Whitney" Chains are used by the leaders because they are strong, accurate, dependable and above all long lived. They are made right and they're made from the right kind of material, thus giving highest efficiency. When making replacements insist on a "Whitney."

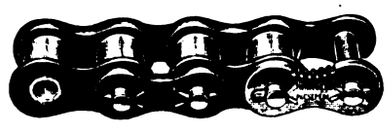


"Whitney" Chains Are Built for Strains

THE WHITNEY MFG. CO., Hartford, Conn.

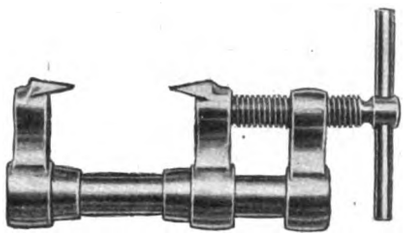






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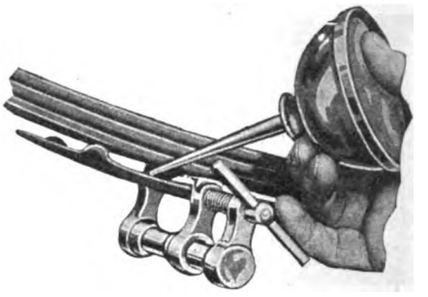
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Made in all types for all standard rims.

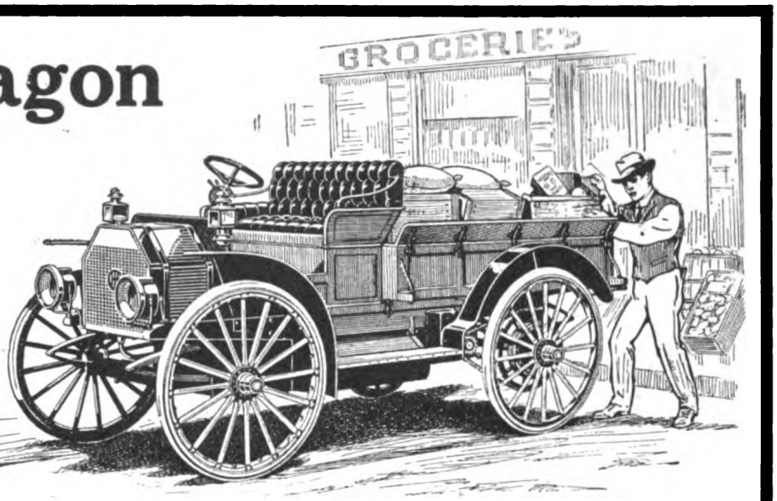
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In selling motor cars for quick deliveries or light hauling the point to drive home is: ***"This car is the best on the market for your purpose. It pays larger dividends on the money invested than any other car,"*** and of no motor delivery car on the market today is that statement so true as it is of the

International Commercial Car

More than 6,000 of these cars in daily use by business men in city, town and country prove the usefulness of the car for quick deliveries and light hauling. More than 1,000 repeat orders this year prove that the car extends the business of its users.

The International Commercial Car, designed and built for business purposes only, is worthy the consideration of every vehicle dealer who reads this magazine. Here are a few of its advantages:

It interferes in no way with sales of pleasure cars. In fact, every pleasure car owner is a better prospect for an International Commercial Car because he owns an auto.

The machine is so simple that any man of average intelligence can learn quickly how to manage it.

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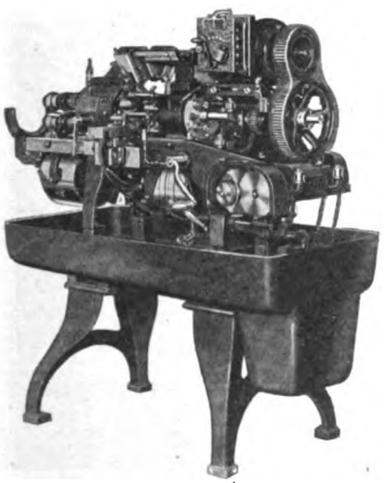
Its first cost is reasonable—less than that of the horses required to do the same work.

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Write for our co-operative selling plan and any desired information about the car.

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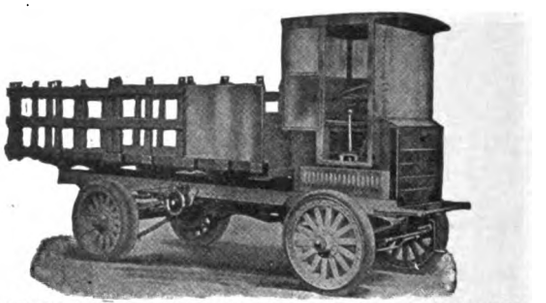
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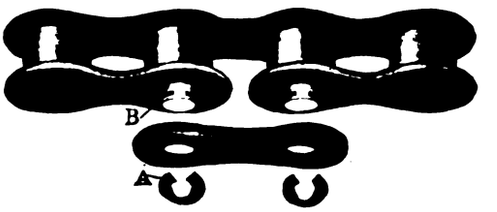
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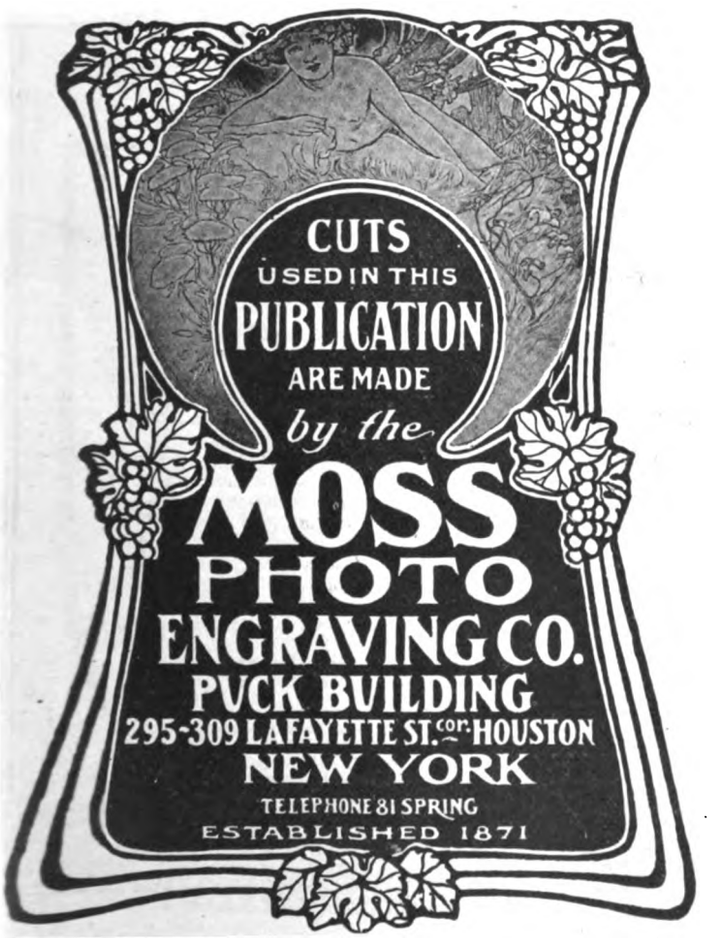


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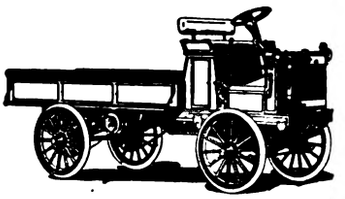
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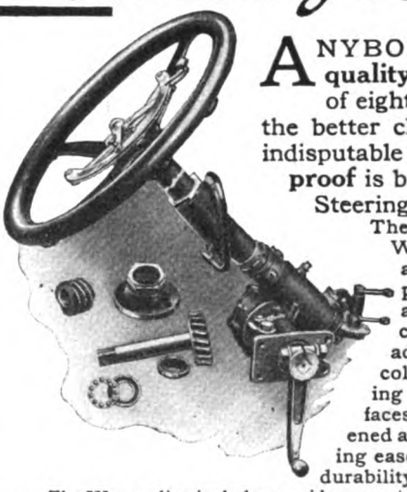
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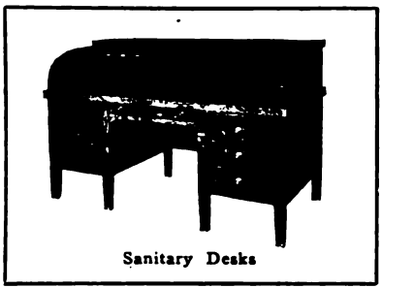
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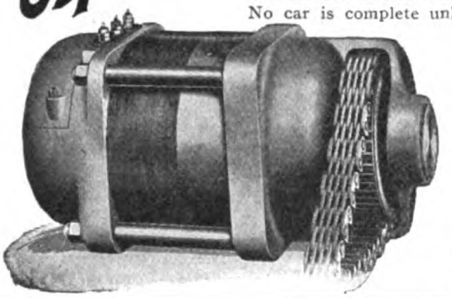
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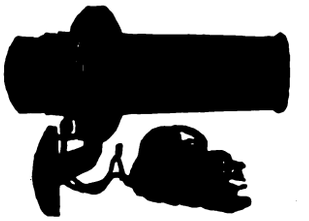
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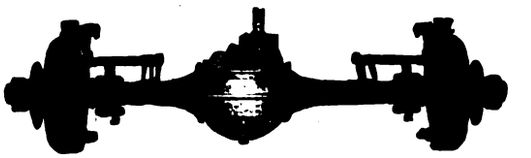
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Motorists who use Republic Staggard Tread Tires will tell you that they—

Prevent skidding, make quick starts and short stops easy.

Give double mileage because of the full-thickness tread under the studs.

Most Widely Imitated of All

We guarantee the Republic Black-Line Red Inner Tube to be as nearly perfect as a tube can be made—and is a fitting companion for the splendid Republic Staggard Tread.

The Best Tube Made



The Republic Rubber Co.
Youngstown, Ohio

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Model "45"—$2150

Biggest, best proposition ever offered to dealers. Illustrated book free. Glide "45" in Two, Four, Five and Seven passenger models. Write us today.



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THE MARION MOTOR CAR COMPANY
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We are now arranging agencies for 1913.

Write for full particulars

DORRIS MOTOR CAR COMPANY
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Direct Drive—Single Reduction
Foot Control
Irreversible Worm Steer
Long Mileage Batteries
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Model 29 Roadster, . . $2,600
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The Buffalo Electric Vehicle Company
Buffalo, New York

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THE UNIVERSAL CAR

It's the car that has "made good." In numbers far exceeding any other car—on all sorts of roads and under all sorts of conditions. Prices $525 to $800. Dealers everywhere.

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"The Easiest Riding Car In The World"

The Marmon "32"

32-40 H.P., 120-inch wheelbase, self starting, dynamo lighting, with body types to meet every requirement and corresponding equipment —$2,850 to $4,100

The Marmon "Six"

48-80 H.P., 145-inch wheelbase (turns in 40-foot street), self starting, dynamo lighting, with body types to meet every requirement and corresponding equipment —$5,000 to $6,350.

Detailed Information on Request.

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INDIANAPOLIS (Est. 1851) INDIANA

Sixty Years of Successful Manufacturing

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"The Car With A Conscience"

Write for the advance announcement describing 1913 models.

FOUR AND SIX CYLINDER MODELS

$1000 to $3000

OAKLAND MOTOR CAR CO.
250 Oakland Boulevard PONTIAC, MICHIGAN

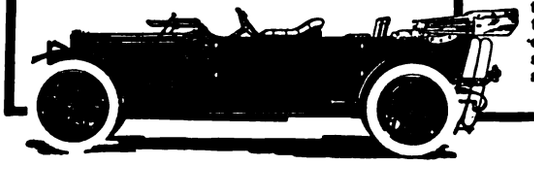
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Every part built in the KisselKar plant, which is equipped with every facility for economical manufacture. All KisselKars have extra liberal wheelbase and roomy tonneaus unsurpassed by any car at any price for comfort and capabilities. Write for catalog.

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"Thirty"
"Forty"
"Fifty"
60 H.P. "Six"

KisselKar prices include full equipment—self-starter, top, windshield, demountable rims, speedometer, electric lighting equipment, shock absorbers, etc.



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SPARK PLUGS
Ignition Absolutely Sure
RAJAH AUTO SUPPLY CO. BLOOMFIELD, N. J.
Also Makers of RAJAH TERMINALS- the Best Made

The Inner Tube Repaired in 15 Minutes
on the road or at home—do it yourself. It is easily done, if you have the
Imperial Vulcanizer Repair Kit
(Pays for itself in a short time)

No electricity. No steam. A little rubber and a little gasoline.

Price $3.50

Complete with enough rubber for 40 punctures.



Nickel Plated Patent Pending

AT YOUR DEALER'S OR SENT BY EXPRESS
Guaranteed to Satisfy or Money Refunded
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There are no other motor lamps on the market with the advantages of Solar Lamps. Solars are always exclusive in style and in quality. They are the strongest lamps as well as the most effective.

In no other lamps can you obtain the Solar Special Short Focus Lead Glass Lens Mirror Reflector—the patented system of double ray light projection which gives two distinct fields of light for town and country use—or the new and exclusive black finish with a metallic lustre which is unaffected by heat or moisture. All of these features are exclusively "Solar."

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Solars are made in all styles for oil, electricity, gas and in combinations.

Solar Lamps

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JENCICK MOTORS
For Motor Trucks

from base to spark plug, have features that are "Different and Better."

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"Always There"
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436 Housatonic Ave. Bridgeport, Conn.
We also make Duplex and Raymond Brakes and Gyrex, the Mixer.





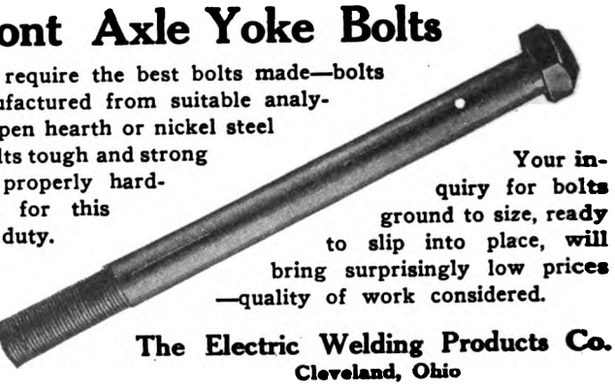
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Do you wish to make your car more comfortable by installing a pair of auxiliary seats? If so, have the best. Our seats are made in five styles. Send for catalogue.

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You require the best bolts made—bolts manufactured from suitable analysis open hearth or nickel steel—bolts tough and strong and properly hardened for this vital duty.



Your inquiry for bolts ground to size, ready to slip into place, will bring surprisingly low prices—quality of work considered.

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Hupmobile "32" Touring Car, Fully Equipped, $975 F.O.B. Detroit

Long-stroke motor, 3¼ x 5½ inches. Enclosed valves. Three bearing crank shaft. Unit power plant. Multiple Disc clutch. Three speeds forward. Sliding gears. Full floating axle. Center control. Zenith carburetor. Bosch magneto. 106-inch wheelbase. 32 x 3½ inch tires. Quick detachable rims. Mohair top with envelope. Jiffy curtains. Windshield. Rear shock absorber. Prest-O-Lite tank. Gas headlights. Oil side and tail lamps. Tools—horn. Trimmings, black and enamel. Standard color, black. Magneto and camshaft driven by silent Coventry chain.

Hupmobile "32" Roadster, Fully Equipped, $975 F.O.B. Detroit

Chassis and specifications same as Touring Car. Large turtle back dust proof compartment for extra accessories, tires and baggage.

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Chassis same as Touring Car. Enclosed panel body. Two cushioned lazy-back seats. Carrying capacity, 800 lbs. Chassis and body painted black, high-class finish. Two-piece windshield. Prest-O-Lite tank. Gas headlights. Oil side and tail lamps. Quick detachable rims. Tools—horn. Trimmings, black and nickel.

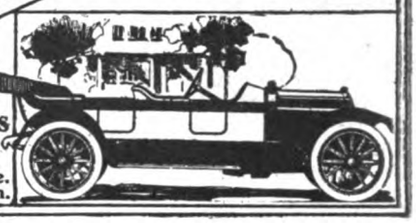
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THE TOURABOUT LINE

Four-40, Tourabout, 128-in. wheel base . . . $1450
Six-45, Tourabout, 136-in. wheel base $1750
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Complete specifications will be sent on request.



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Chicago Branch, 2437-39 Michigan Ave.
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The Car Complete F. O. B. Detroit

Five-Passenger Touring Car

THE CAR—The best materials, the highest-grade workmanship, and the most up-to-date ideas in construction

EQUIPMENT—The most complete, highest-grade equipment ever placed on a popular-priced car.

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Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

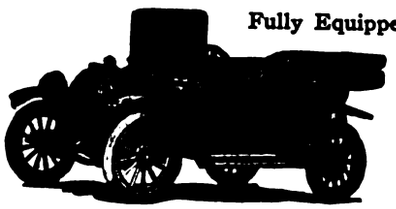
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The Detroiter—$850

Fully Equipped

Five Passenger Touring Car



25 H. P. Long Stroke Motor

Enclosed Valves, Three Point Suspension, Unit Power Plant, Platform Rear Springs, Full Floating Axle, Left Hand Drive, Center Control, Drop Frame, Large Tires, Complete Ball Bearing Car. Write for specifications.

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"Distinctly Complete"

Electrically Self-Started and Lighted

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Six Models 40 and 50 H. P. Fully Equipped

Model 40—5 Passenger, Fore Door Touring Car.

Model 41—4 Passenger Demi Tonneau.

Model 42—Roadster type—all with the splendid new en bloc motor, 4½ inch bore, 5½ inch stroke. 40 H.P. $2400

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Model 51—4 Passenger Demi Tonneau.

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Fully equipped with top, windshield, speedometer, gasoline gauge, 36" wheels, demountable rims, and automatic tire pump.

All fully described in our Art Catalog. Send for one today.

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40-Horsepower Touring Car or Roadster, absolutely silent in operation. Oversize tires 35 x 4½—cylinders 4¼ x 5¼ in.—118-in. wheelbase—four-forward-speed transmission—demountable rims—nickel mountings—massive, straight-line body—big, roomy seats—electric lighting by generator—everything. Price $1585, includes full equipment. Two smaller models. Catalog on request.



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THE ULTIMATE CAR
(KNIGHT TYPE MOTOR)

The first American Car to adopt the Silent Knight Motor—the engine used by Daimler, Mercedes, Panhard and Minerva.

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CLEVELAND, OHIO
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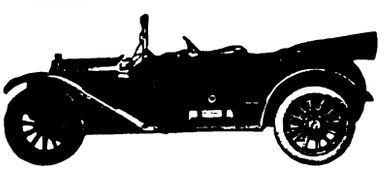
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$2,750 Fully Equipped

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Lift up the hood of any Mercer and you will learn why it is "the most talked of" automobile in America today.

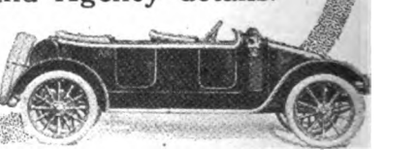
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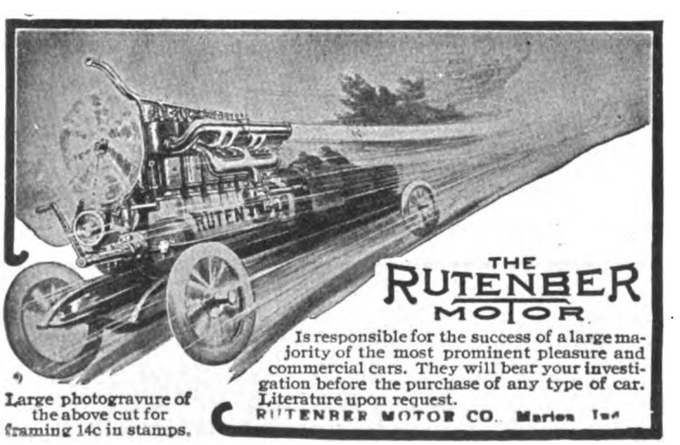
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Series Eight comes in Three Chassis:

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WRITE TODAY for Cole Blue Book and dealer's proposition.

COLE MOTOR CAR CO., Indianapolis, Ind.

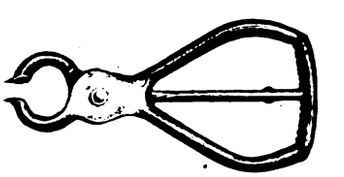
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For Automobiles, Motor Trucks, Aeroplanes, Motorcycles, Bicycles.

We Also Make Axles and Hubs.

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We could build them cheaper But We Won't.

We would build them better But We Can't.

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Subsidiary of The B. F. Goodrich Co.

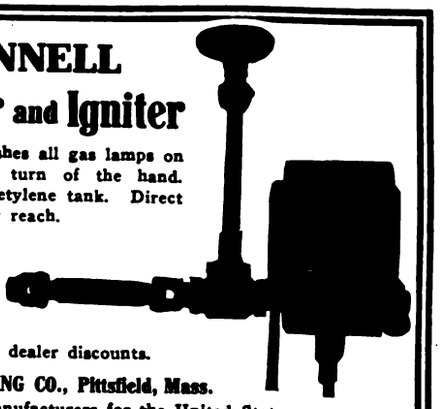
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Convenient

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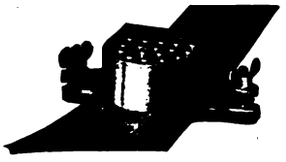
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TIRE CUTS ruin casings. They admit moisture to the carcass, cause the fabric to rot and weaken, grow larger-end in blowouts.

You can repair CASINGS and INNER TUBES anywhere in 15 minutes, better than a Repair Shop can do—and for *one cent.*

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Patented

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It *can't burn, scorch* or *injure* tube or casing. It *can't* get out of order. It *can't* fail to do its work. So simple, anyone can operate it. The Universal Auto-Vulcanizer saves its cost a *hundred times* over in trouble and expense

Price Complete, **$4.00** Ready for Instant Use

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Regular Type $1

Unless your spark plugs resist soot and carbon, they are not up to the

Reliance

standard of efficiency.

Ninety per cent. of all engine troubles can be traced to the ignition system—a better understanding of this system helps.

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Largest Spark Plug Manufacturers in the World

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fit any style or make of tires. The side rings are reversible, they curve outward on one side to fit a straight side tire, inward on the other to accommodate a clincher. Two turns of a nut unlocks the rim for demounting, two more turns locks the rim in place. Write for catalog 607, which explains fully.



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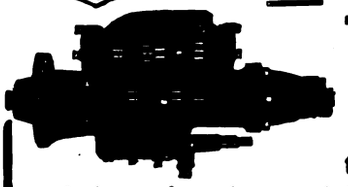
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That's what the big car builders that use them say. It's the transmission that is specialized—still it is less expensive than if built by yourself. Write us.

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GEARS

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$3,000,000 in plants affording the most superior facilities for fine work; also hardening and treating of the finished product. Most thorough inspection and testing system. Our own laboratory.

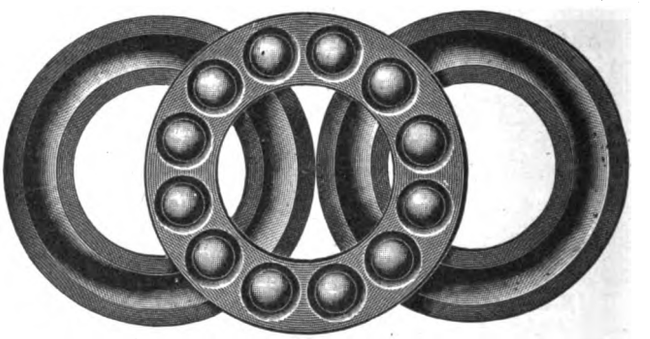
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Manufacturers of Auto Parts,
Kinwood Radiators, Fenders,
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SPECIAL METAL STAMPINGS

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JONES RECORDER

Tells of every movement of your truck or delivery wagon. Gives daily chart showing how fast, how far your vehicle traveled. When it stopped, how often and how long.

Write For Particulars.

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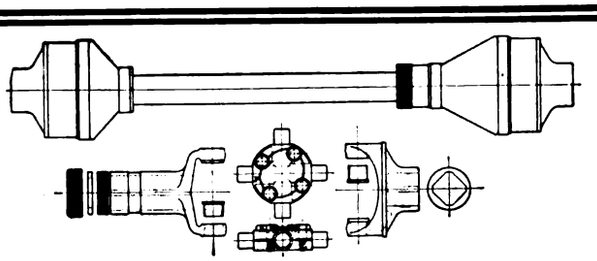


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are the least likely to require changing, and afford the best means of tire changing when required.



The Firestone Tire & Rubber Co., Akron, Ohio
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We supply single universals or drive shafts complete as shown. Forgings special analysis steel heat treated. Note extreme simplicity, insuring long life.

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A "six" designed and built with the care and skill and good workmanship that have made the Continental the best known motor in America.

Built to accommodate any type of self starter now made; and suitable for either left or right side drive.

Write for booklets.

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IT ONLY COSTS ONE CENT to learn our unheard of prices and marvelous guarantee on "Brictson" Detachable Treads.

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NATIONAL Compound Mixer and Primer

makes any car start easier in cold weather; adds 10 to 40% to power and mileage. Simple, easily installed, guaranteed effective on any motor. Get details and price.

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"STANDARD" WHEELS
FOR PLEASURE OR COMMERCIAL CARS
One Passenger to 16 Tons Capacity
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START YOUR CAR FROM THE SEAT
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900 N. Craig St., Pittsburg
Standard Tire & Rubber Company, 4 Dunbar St., sentee Distributors for New England States

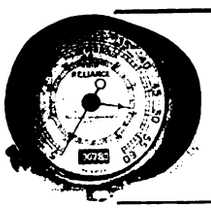
A—Shows double, notched treads.
B—Shows undercut sides.
C—Shows aluminum bridges.
D—[illegible] absorbing means when [illegible] over an obstruction.

Mosler
Spit Fire Plugs
ARE THE BEST
A. R. MOSLER & CO.
P. O. BOX M.
MT. VERNON, N. Y.

SIMMS MAGNETO "American Made"
NOW READY FOR THE TRADE
Highest Efficiency—Good Service Guaranteed.
The SIMMS MAGNETO Co. 1786 Broadway, N.Y. City Factory, Bloomfield, N.J.

Auto-Top Fabrics
OF EVERY DESCRIPTION
SAMPLES AND PRICES ON REQUEST
L. J. MUTTY CO., Boston

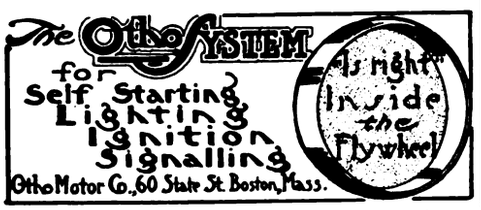




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"The Speedometer of Quality"
Special features that eliminate speedometer troubles. Send for the booklet.
Reliance Speedometer Co.
134 Eliot St. Boston, Mass.



Tones down headlights for city driving and foggy nights an auto necessity. Price 75c. per pair. Sell like hot cakes. Dealers, secure the agency quick.
F. H. TOBIAS
1931 Broadway, New York



Weed Chains

The Great Anti-Skid DEVICE



Nine-tenths of all accidents to automobiles are caused by skidding or slipping.

Either you skid into the "other fellow" or the "other fellow" skids into you.

No matter how careful a driver you may be, you cannot prevent skidding or slipping on wet, muddy snow-covered roads or on icy, slippery greasy pavements unless you equip your car with Weed Chains.

Cannot Injure Tires
Because They Creep

An absolute necessity on both rear wheels and if you want to know what real steering steadiness means put them on the front wheels too.

For your own safety—for the safety of the public, fully equip your car with Weed Chains. Make it your business to get a set today.

Recommended and sold by all reputable dealers
Weed Chain Tire Grip Co.
28 Moore St. New York

The Name "Weed" on Every Hook

Argo Electric
For the Gentleman and Gentlewoman
Beautifully Finished—Perfectly Equipped Easily Operated
Send for the new Argo Electric Catalog.
ARGO ELECTRIC VEHICLE CO., Factories, Saginaw, Mich.
Metzger-Herrington Co., Distributors,
2412-14 Michigan Ave., Chicago.

The NIAGARA Self Starter
Is "As Dependable as Niagara"
Simple as It Is Efficient
Good Territory Open
THE NIAGARA SALES COMPANY
704 Main Street Buffalo, N. Y.

75% Increase in Tire Efficiency
That's what the INNERSHU accomplishes. It's a tough, durable, rubberized fabric formed permanently to tire shape. Ask for circular.
INNER SHOE TIRE COMPANY
Front Street Grand Rapids, Mich.

INVADER OIL
"The Best the World Affords"
CHAS. F. KELLOM & CO.
Philadelphia Boston

Woodworth Treads
will help you to increase your business while benefiting your customers. We will send any responsible dealer a pair on 30 days' trial Write now. Good Agents wanted for unoccupied territory.
LEATHER TIRE GOODS CO., Niagara Falls, N. Y.

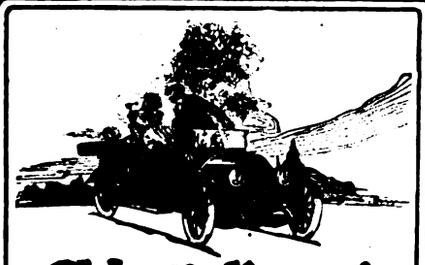


Magneto Plugs coax maximum power out of engine.
EMIL GROSSMAN COMPANY, Mfr., New York and Detroit

Schafer Ball Bearings
Famous for Their Durability
BARTHEL, DALY & MILLER
42 Broadway NEW YORK

The Ford Water Circulator
forces the water from radiator through cylinder water jacket, maintaining rapid circulation when car is in motion. Write for descriptive matter if you handle Ford cars.
THE FULTON-McCUTCHAN CO.
1146 Michigan Ave. CHICAGO, ILL.

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Abbott-Detroit

"The demand of the day is that an organization shall be judged by its product and not by what it claims for itself" Keep this in mind when you examine these 1913 models

MODELS AND PRICES

30-40	Fore-door Roadster, 116-inch wheel base	$1700
34-40	5-passenger, Fore-Door Touring Car 116-inch wheel base	$1700
44-50	5-passenger, Fore-Door Demi-Tonneau 121-inch wheel base	$1975
44-50	7-passenger, Fore-Door Touring Car 121-inch wheel base	$2000
44-50	Battleship Roadster, 121-inch wheel base	$2150
44-50	7-passenger, Fore-Door Limousine 121-inch wheel base	$3050

Advance Catalog on Request

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807 WATERLOO STREET DETROIT, MICH.

"Built for Permanence" "Guaranteed for Life"

AJAX TIRES

Guaranteed 5000 Miles

Ajax-Grieb Rubber Company

General Offices: 1796 Broadway, New York City
Factories: Trenton, N. J. Branches Principal Cities

Look at our new middle name

PENNSYLVANIA Oilproof VACUUM CUP TIRES

PENNSYLVANIA RUBBER COMPANY

Branches: Coast to Coast. Jeannette, Pa.

GOODYEAR

AKRON, OHIO

This name on Automobile Tires and Rubber Accessories signifies inherent qualities of material and workmanship that insure the maximum of service at the minimum of expense. (673)

The Goodyear Tire & Rubber Co., Akron, Ohio



All Standard Bearings

are fully described in our

New Catalog 24A

Send for it.

STANDARD ROLLER BEARING CO., Philadelphia

The Bush Radiator

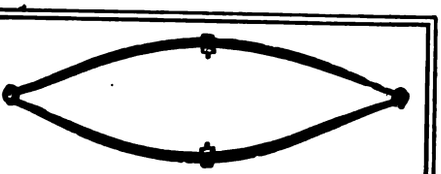
THE BUSH MANUFACTURING CO.
HARTFORD, CONN.

Send Us Your Inquiries When in the Market for

Sheet Metal Stampings

Estimates Cheerfully Furnished

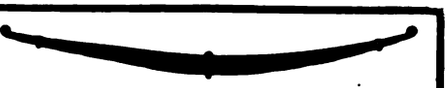
The Bossert Company
UTICA, N. Y.



GUARANTEED AUTOMOBILE SPRINGS

Our plant is devoted exclusively to the manufacture of high quality springs. All work is oil tempered and warranted. Our circulars contain valuable information. Write.

PENN SPRING WORKS
BALDWINSVILLE, N. Y.



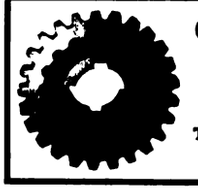
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SPECIALISTS IN

Spring Suspension

High Grade Only

Cleveland, Ohio



GRANT-LEES GEARS

The Grant-Lees Machine Co.
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POLSON Quality Windshields

Auxiliary Seats, Bumpers and Gas Starters

POLSON MANUFACTURING CO., Buffalo, N. Y.

The Sturdy STUTZ

It is as beautiful as it is sturdy. Your eye feasts on it, while your reason endorses it. A disappointed STUTZ owner has never been found. Write today for advance Booklet A-15 Sturdy STUTZ Announcement, Series B.

IDEAL MOTOR CAR COMPANY, Indianapolis, Ind.



These Tires for You

Four corps of experts working in four of the best equipped tire plants in the world are operating as a unit to produce.

UNITED STATES TIRES

Nothing of the kind has ever before been attempted in automobile tire manufacturing.

United States Tire Company
New York

Cutting

1913 IMPORTANT FEATURES

Self Starter	Electric Lighting
Turkish Cushions	36-in. x 4-in. Tires
12-in. Upholstering	Increased Wheel Base
Great Ease of Riding	Carburetor Dash Adjustment
Demountable Rims	Nickel Trimmings

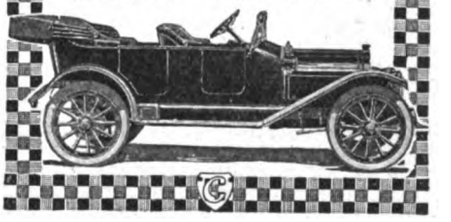
Unit Power Plant—three point suspension.

Cutting B-40, 120 in. Wheelbase, 40 h. p. 5-passenger touring car, fully equipped, $1475

Cutting A-40, 120-in wheelbase, 40 h. p. 2-passenger roadster, fully equipped, $1475

Cutting C-55, 132-in wheelbase, 55 h. p. 5-passenger touring car, fully equipped, $2000

Cutting Automobile Co.
305 Mechanic Street, Jackson, Mich.



$495.00 METZ 22 H. P. MOTOR CAR

The most economical car you can buy at any price. The Metz will run from 28 to 32 miles on a gallon of gasoline, over 100 miles on a pint of lubricating oil, and from 8,000 to 10,000 miles on a set of tires. You can secure exclusive sale of these cars in your territory. Book "B" mailed free on request.

METZ COMPANY, Waltham, Mass., U.S.A.

Reo the Fifth

Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 38 horsepower four cylinder car of modern refinements priced at only $1,095.

(38) R. M. OWEN & CO., General Sales Agents

REO MOTOR CAR CO., Lansing, Mich.

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order. In capitals, 25 cents per line.

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

SALESMEN calling on garages and repair shops are wanted to handle one of the best tire vulcanizers on the market. Vulcanizers that are unequaled in volume of first-class work, cheapness of operation and low cost. Made in five models, according to capacity, and priced from $20 to $45. A demonstration sells them to every garage and repair shop that cares to add the profitable business of vulcanizing. If you are open for a good, liberal commission proposition, and are willing to make a deposit on sample, write for terms and exclusive territory. DIAMOND MANUFACTURING CO., 504 Equitable Bldg., Des Moines, Iowa.

RECEIVER.

For sale cheap, nine Sultan taxicabs in fair shape; one Thomas seven-passenger Flyer, 40 H. P., 1908 model; one five-passenger Selden, 1909 model. Address, RECEIVER, 1013 Third Nat'l Bk. Bldg., Atlanta, Ga.

AUTOMOBILE OWNERS, selling out new device that repairs punctured inner tubes without cement, $2.25 per set, worth $5. 4044 N. Marshall St., Philadelphia, Pa.

WANTED—Two-passenger coupe body for Ford model T chassis; must be in good condition and cheap for cash. Please state price when writing. J. F. McCORMAC, M.D., Verona, Ky.

$750 stock in prosperous manufacturing concern for five-passenger auto in good conditdion. State model and full particulars. 871 Noble Ave., Bridgeport, Conn.

PEERLESS EXTRA FINE BLACK BAKING JAPAN

Bakes either to a high gloss finish, eggshell gloss or dull finish on lamps, radiators and fenders. Will not crack, chip or peel. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

AMERICAN 1912 "Traveler," new, full equipment, guaranteed, will sacrifice to immediate purchaser. CHAS. E. RIESS, 1896 Broadway, New York City.

DO you wish to better your position? If your character and ability will stand investigation we can place you in any occupation, anywhere. Enclose 50c. for registration with references. Fee returned if unsuccessful. Address DEPT. F, BLUE LIST EMPLOYMENT EXCH., 250 West 87th St., New York City.

NEW YORK Automobile Registrations, mailed daily, $1.25 per month. List, April to October, inc., $2.50. OWNERS AUTO LIST COMPANY, Albany, N. Y.

MAILING LISTS—Automobile owners, dealers, garages, repair shops, commercial car owners, or any make of car. OWNERS AUTO LIST CO., Albany, N. Y.

APPERSON, 1907, 40 H. P., four seats; makes 60 miles per hour; everything new; bargain for ready buyer. A. C. HEWITSON, 101 West 66th St., Room 4, New York City.

SALESMEN, one who is now visiting automobile trade or owners. Good money made on a very attractive proposition. STURDY MFG. CO., 2637 Michigan Ave., Chicago, Ill.

STUCK deep in mud or sand? My new appliance will help you out. A Xmas present. E. I. SPENCER, 3201 E. Douglas Ave., Wichita, Kan.

FORD spare demountable wheel, something new. No tire trouble on road. Write. ANGIER'S, Streator, Ill.

PEERLESS EXTRA FINE BLACK JAPAN

Covers solid one coat for enameling lamps, radiators and fenders. No undercoat required. Heat does not affect it. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

FOR SALE—Palmer-Singer 6-60 motor and transmission complete, in good condition. DR. FRYER, Riverside, Wash.

ATTENTION—Have a few manufacturers' samples, gentlemen's black broadcloth fur lined overcoats, lined throughout with Australian mink, large genuine Persian lamb collars, sizes 36 to 48. Value $75, will sacrifice for $35 each. Also several ladies' handsome long fur coats, satin lined, worth $90, while they last, $35; and few large size fur robes, plush lined, $15 each. All guaranteed new. Examine before buying. Send express charges, will send on approval. Write or call. E. ROBERTS, Room 8, 160 West 119th St., New York.

PEERLESS LEATHER TOP DRESSING

An oil preparation that softens the leather and pantasote. Makes old tops look like new. Ask your garage and supply dealer for it.
The Columbus Varnish Co., Columbus, O.

FOR SALE—Model T 1910 Ford 5 passenger touring car, fully equipped and in good condition, $350. FRANK O'HEARN, Melrose, Wis.

An ad. like this will cost you $1.20 for each insertion.

Mr. Dealer:

8,000 readers means people primarily interested, otherwise they would not be subscribers. Make them your customers or eager to secure your patronage by

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order: — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

AGENTS WANTED — To handle the $1000 G. J. G. "Junior," racy, classy and specially designed chaseabout with 104-inch wheelbase, with a real 26 H.P. motor, Bosch magneto, Dorian remountable rims with 32 x 3½ tires, at a price of $1,000, which is a money maker for the sales agent. Write for literature and discounts to G. J. G. MOTOR CAR COMPANY, White Plains, N. Y.

SCORED CYLINDERS repaired, $12. No enlargement of bore—no need for new pistons and rings. Send piston with cylinder. Absolutely reliable method. References, testimonials, and full details on request. WATERBURY WELDING CO., Waterbury, Conn.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

AUTOMOBILE and Motorcycle Tours—350 trips over the best roads in every State. 56 large pages of maps and road directions. 25c. postpaid. MOTOR TOURS, 51 Chambers St., New York.

PEERLESS LINING DYE
Dyes the cloth linings of tops and curtains a black, uniform color, covering up water stains and grease spots. Does not wash off. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

WANTED—A first-class man to take the agency for the latest invention on the market, a rubber cover for automobile handles called Steerease; write for full particulars. Address DEPARTMENT E, GOODYEAR RUBBER HOSE AND PACKING CO., 221 Chestnut St., Philadelphia, Pa.

telling them what you have to sell or want to buy. We guarantee a circulation of 8,000, so the actual cost of having your announcement appear before this audience is less than one-fourth of a cent per reader (see the hands in the margin). Think this over.



An ad. like this will cost you 75c. for each insertion.

WANTED—Packard 18; state price, year built and number of miles run. P. O. BOX 161, Niantic, Conn.

AUTOMOBILE Cylinders reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

NEW CHEESE CLOTH REMNANTS, best polishing material, sold by the pound. Saves 40% of store prices. Price 38c. per pound in 50-lb. and 100-lb. bales. Agents wanted everywhere. AMERICAN MILL ENDS CO., Detroit, Mich.

PEERLESS BACK AND CUSHION DRESSING
Softens the leather and will not crack, wash or rub off. Makes old leather look like new. Dries in twenty minutes. Ask your garage or supply dealer.
The Columbus Varnish Co., Columbus, O.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

CHAUFFEUR'S COMPLETE OUTFIT SACRIFICED—Consisting of elegant mink fur lined coat, Persian lamb collar, $35; pair of elegant bear robes, $15 each; raccoon cap, $5; pair of fur gloves, $4; pair or goggles, 50c.; 1 pair leather leggins, $3.50. Will sell separately or the lot, all new, never worn, original price, $225. C. CHASE, 118 East 28th St., New York.

WHITE STEAMER, seven-passenger, model M, straight line body, 40 H.P.; absolutely perfect; complete equipment; $700. H. SNYDER, 112 West 38th St., New York. Telephone 4060 Greeley.

FOR SALE—One 2-ton Garford truck, with body and top, nearly new, in first class condition. Change of business reason for selling. SPRINGFIELD CREAMERY, Springfield, Mass.

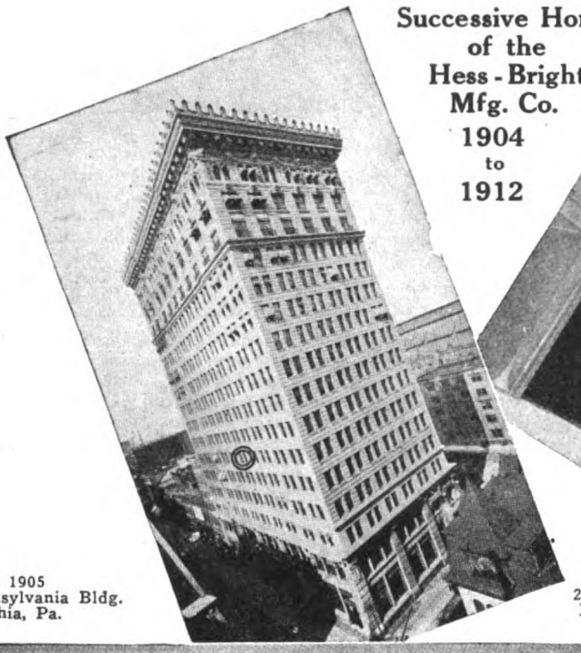
PEERLESS AUTO TOP DRESSING.
A waterproof dressing for leaking mohair and duck tops and curtains. Makes old and faded tops look like new. Ask your garage and supply dealer for it.
The Columbus Varnish Co., Columbus, O.

AUTOMOBILES—A. C. C. A. Prices Talk! Every make. Every model. Hundreds runabouts, racy roadsters, five-seven passenger touring cars. $50 up. Guaranteed five years. Shipped Freight Prepaid!. Write today for the largest Illustrated Catalog published! THE AUTOMOBILE AND CYCLE COMPANY OF AMERICA, Dept. I-N, 1769-1787 Broadway, New York City.

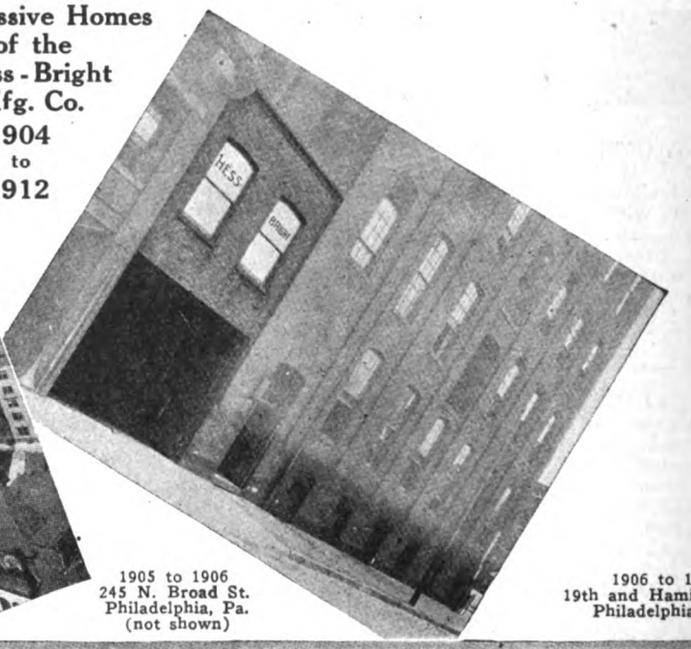
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The American Growth of Hess-Bright Ball Bearings

Successive Homes of the Hess-Bright Mfg. Co. 1904 to 1912

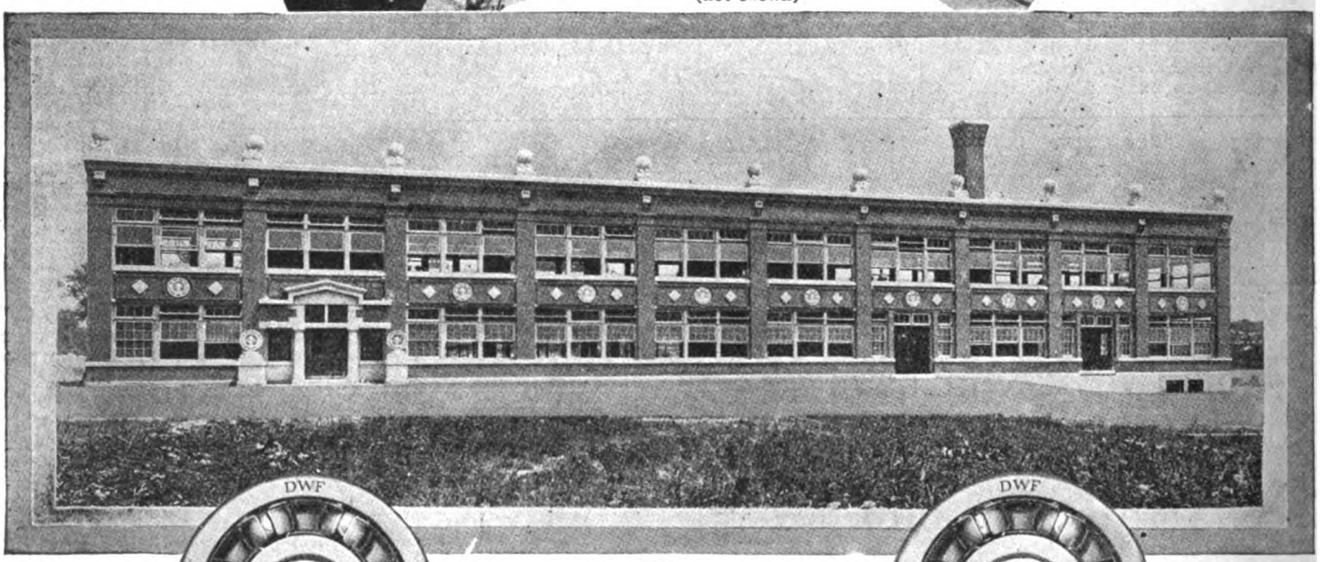


1904 to 1905
Room 606, Pennsylvania Bldg.
Philadelphia, Pa.

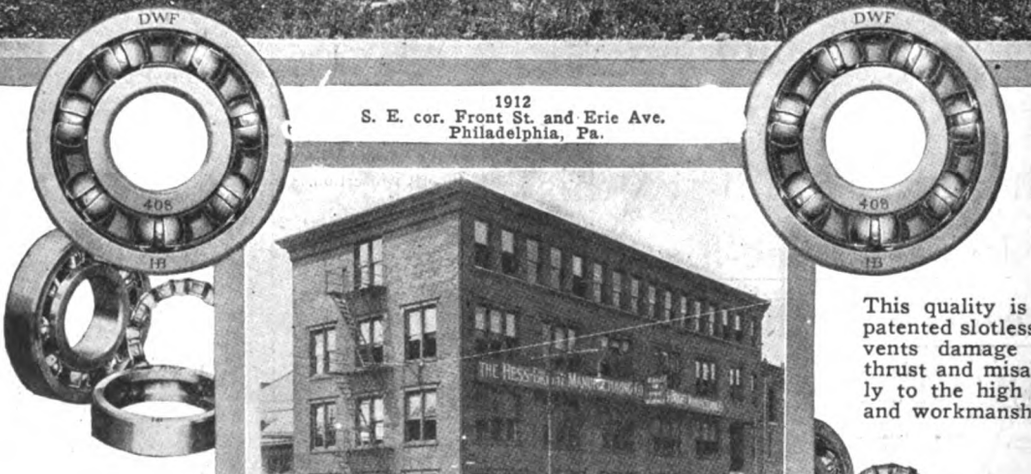


1905 to 1906
245 N. Broad St.
Philadelphia, Pa.
(not shown)

1906 to 1908
19th and Hamilton Sts.
Philadelphia, Pa.



1912
S. E. cor. Front St. and Erie Ave.
Philadelphia, Pa.



1908 to 1912
21st St. and Fairmount Ave., Philadelphia, Pa.

This quality is due partly to the patented slotless design, which prevents damage arising from end thrust and misalignment, and partly to the high grade of materials and workmanship used.



The causes of HESS-BRIGHT **success** are found in the enduring **quality** of the bearings themselves.

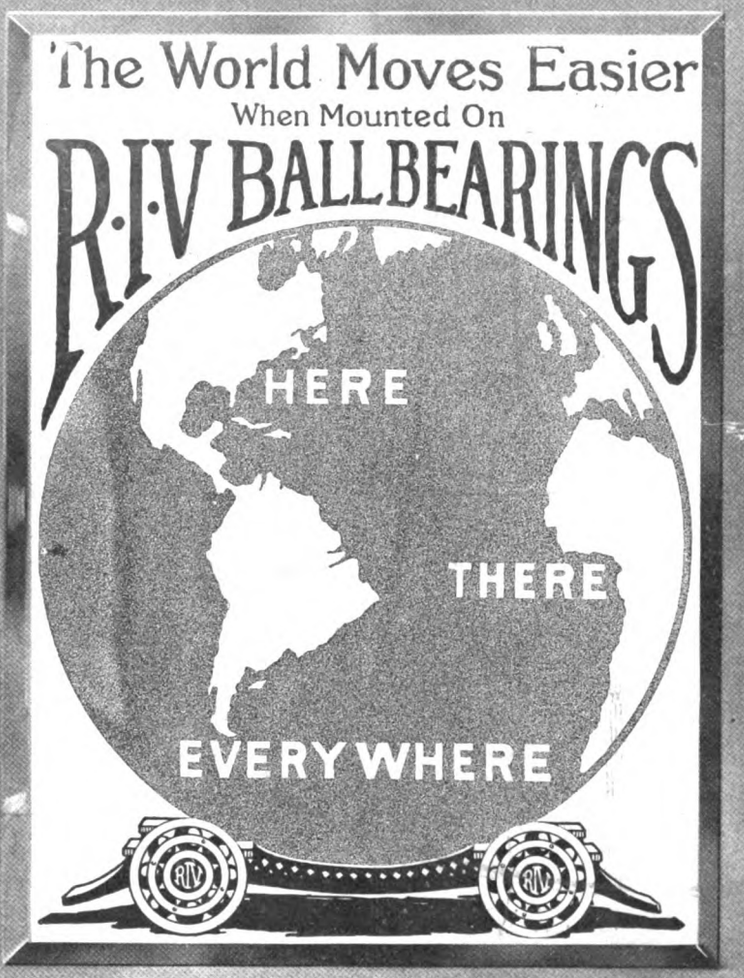
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DEALERS

Be Sure Your Cars Are

EQUIPPED

With



R.I.V. Bearings Presuppose Car Quality

R.I.V. Equipped is a Strong Selling Argument

In the making of any automobile part (including ball bearings) quality of material is a minor consideration as it affects the integrity of the completed device.

Every ball bearing made in this and other countries has high grade *crude* steel and other metals as its birthright—but at this point comes the parting of the ways.

The net worth (or lack of it) can only be predetermined by the amount of gold and silver that goes into the pay envelopes of the chemists who increase the hardness and tensile strength of the steel—the engineers who design to get the most and best out of it—the machinists who tool and assemble the parts, and the experts who test them in every process of evolution.

R. I.V. Ball Bearings are made in a factory where a premium is put on brains—and that is why these bearings are exclusive in quality and price—and why they ought to be on the cars you sell.

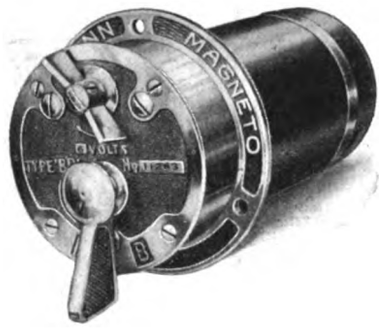
R.I.V. COMPANY IMPORTED SINCE 1904 1771 Broadway, New York

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EISEMANN

Much of the success of the new Eisemann Type E. B. High Tension System with separate transformer coil is due to the extreme simplicity and remarkably great efficiency of the contact breaker which is illustrated at the bottom of the page.

Simply looking at this contact breaker conveys immediately its remarkable simplicity. There is almost nothing to it and yet a more efficient piece of mechanism has never been devised. This breaker device is tested out at 4,500 r. p. m. and must accurately and perfectly make and break the current running at that speed before the magneto is turned out. This test is maintained at more than double the speed ever attained by the magneto in operation on a four cylinder car.



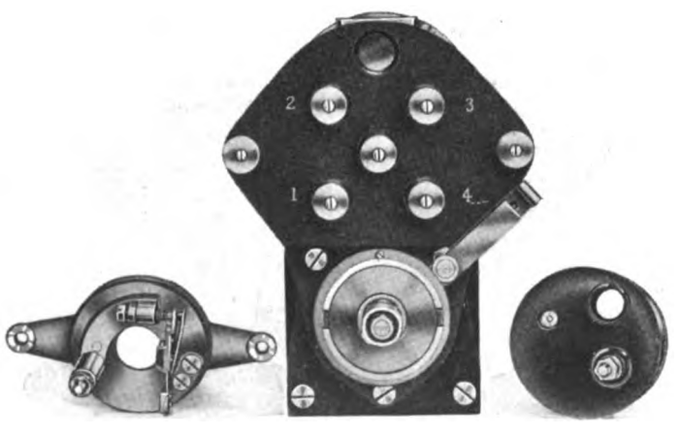
The coil which is used in this Type E. B. High Tension System with separate transformer coil and which is illustrated herewith, is placed through the dash and it includes a switch and mechanical device for starting on the spark.

THE EISEMANN MAGNETO COMPANY

Sales and General Offices
225-227 West 57th Street NEW YORK CITY

INDIANAPOLIS
514 N. Capital Avenue

DETROIT
6 Goldberg Building



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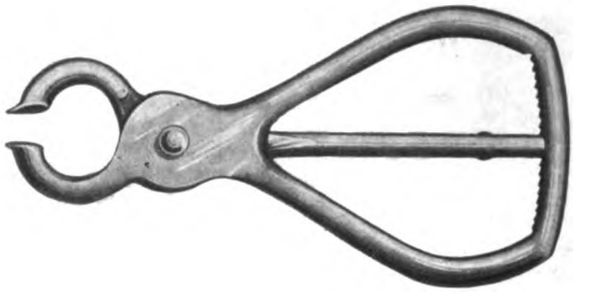
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Warner Speedometer
Mohair Top and Boot
Clear Vision Wind Shield
Prestolite Tank

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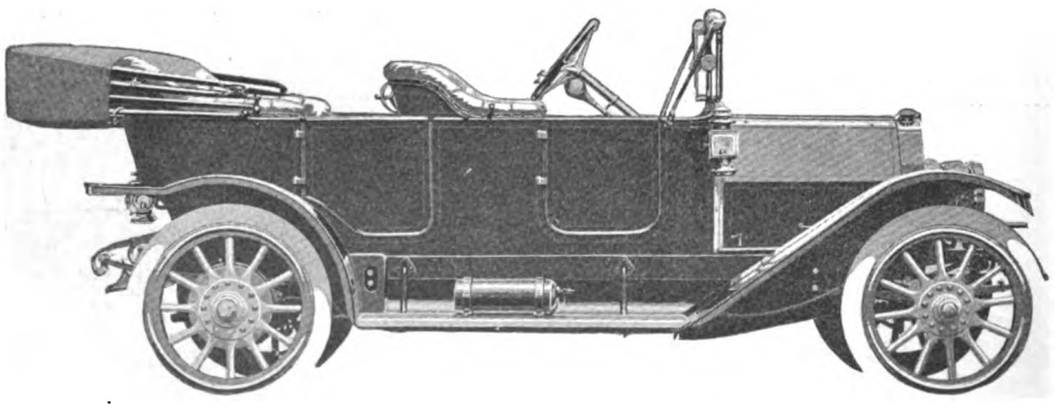
Overland Model 69T brakes are as large as those on $1500 cars. Look up the specifications of the latter; see for yourself.

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We use heat-proof, wire-woven asbestos for brake lining; we make special provision for the prevention of dragging; sand, mud, dust and water are defied by close fitting guards.

A catalogue for the asking. Please address Dept. 50.

The Willys-Overland Company
Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, November 21, 1912 No. 9

NASH SUCCEEDS NEAL AS HEAD OF GENERAL MOTORS

Neal, However, Remains a Director—Two Vice-Presidencies Abolished but Durant Retained on Board —Few Changes Made.

After successfully having guided the General Motors Co. out of the hot water which surrounded it when he assumed the reins at the time of its reorganization in December, 1910, Thomas Neal, of Detroit, on Tuesday last, 19th inst., declined re-election and relinquished the presidency to C. W. Nash, who is general manager of the Buick Motor Co., which constitutes the largest unit of the General Motors organization. Neal, however, will not entirely divorce himself from General Motors affairs, as he was chosen chairman of the board of directors.

The annual meeting of the $40,000,000 corporation was held on that date at its legal office in Jersey City, N. J., at which time these other officers and directors were chosen: Emory W. Clark, vice-president; Standish Backus, secretary; James T. Shaw, treasurer; M. Alvord, comptroller. Board of directors: Thomas Neal, chairman; Joseph Boyer, M. J. Murphy, A. N. Brady, Emory W. Clark, James T. Storrow, W. C. Durant, Albert Strauss, Andrew H. Green, Jr., N. L. Tilney, J. H. McClement, Charles W. Nash, Edwin D. Metcalf and Jacob Wertheim. Finance committee: James J. Storrow, chairman; Emory W. Clark, M. J. Murphy, W. C. Durant, Thomas Neal, Andrew H. Green, Jr., Edwin D. Metcalf and Albert Strauss.

C. W. Nash, the new president, has been identified with the Durant-Dort and Buick interests for many years and several months since became a member of the General Motors "inner circle," when he was elected vice-president to succeed W. J. Mead.

Heretofore the General Motors Co. has had three vice-presidencies, but on Tuesday two of them were abolished. Until that time, W. C. Durant, who promoted the General Motors enterprise, served as one of the vice-presidents, despite the fact that for more than a year past he has been engaged in forming a competitive undertaking of his own, which only recently took form in the shape of the Republic Motors Co., capitalized at $65,000,000. Durant, however, was retained as a director and also as a member of the finance committee, the only changes effected at the annual meeting on Tuesday being the elcetion of Nash to succeed Neal as president, and James M. Wallace's retirement from the directorate.

Warren Undergoes Reorganization.

What practically amounts to a reorganization of the Warren Motor Car Co., of Detroit, was effected at a meeting of the directors and creditors which occurred on Tuesday last, 19th inst., and which grew out of a conference held the week before, at which the condition of the company frankly was disclosed and safeguards discussed. It was agreed to extend all notes and other obligations until June 1, 1913, and it also was arranged that the board of directors be enlarged to permit of the election of six representatives of the creditors.

They are as follows: Harry Bissett and H. J. Mallory, of the Weston-Mott Co.; F. H. Lewis, Lewis Spring & Axle Co.; M. Jencks, Port Huron Engine Co.; J. W. Mowe, Firestone Tire & Rubber Co., and G. Jahn, Bosch Magneto Co. Of the old board, Homer Warren, C. H. Wilson and C. R. Wilson remain. Another meeting will be held today, at which the resignations of several of the present officers will be accepted and their successors chosen. The company's balance sheet shows liquid assets of about $375,000 and total liabilities of $350,000, of which $50,000 is a stationary liability against the plant. The factory has been working to full capacity, and now will continue to do so.

COURT FIXES DATE OF SALE OF U. S. MOTOR PROPERTIES

But Delayed Bankruptcy Petition May Complicate Matters — Terms of the Sale and Developments Likely to Follow.

Wednesday, January 8th, has been set as the date for the sale of the assets of the United States Motor Co. and its five subsidiaries, the Alden Sampson Mfg. Co. and the Brush Runabout Co., of Detroit, Mich.; Columbia Motor Car Co., Hartford, Conn.; Dayton Motor Car Co., Dayton, O., and the Maxwell-Briscoe Co., Tarrytown, N. Y.

Yesterday, however, there was filed in the Federal court in Trenton, N. J., a petition in bankruptcy, which may serve to delay or complicate matters.

The petitioning creditors are the Ditzel-Shaw Co., of Ohio, with a claim of $1,361; Horner & Smith Co., $1,356, and Amos Lint, $138, who alleges that the United States Motor Co. owes $12,000,000 and has assets of but $9,000,000.

The receivership was brought about by an action in equity as distinct from bankruptcy proceedings.

Roberts Walker, one of the receivers, said that so far as he was concerned the outcome was a conundrum, and being an officer of the court he was not in a position to discuss the matter. He referred the Motor World man to the receivers' attorneys, Rosenberg & Levis, who gave as their opinion that the filing of the bankruptcy petition does not in any way affect the administration of the property of the defendant by the present receivers. The United States court in New York has ordered the sale of the property and no application having been made to prevent the consummation of the order, the attorneys have no reason to believe that the sale will be postponed or interfered with.

Henry V. Poor, of Joline, Larkin & Rath-

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bone, who represent the reorganization committee, said: "The petition in Trenton will be contested and we hope to secure its dismissal. I do not think it will interfere with the sale and reorganization in any way. In fact, I am informed that the United States Motor Co. is not indebted to Lint and that Horner & Smith have filed their claim with the creditors' committee."

Judge Hough, of the United States District Court, who set the date for the sale, stipulated that it should be held in room 47 of the Federal Building, in New York, at 11 o'clock in the morning, when the bids will be opened in his presence. Meanwhile, the receivers, W. E. S. Strong and Roberts Walker, were authorized to receive bids until 10 A. M. on January 8th at the office of the company, 61st street and Broadway.

According to the court's decree, the property will be offered for sale in six parcels, each parcel comprising one of the companies, and immediately thereafter the entire properties will be offered in a single lot. After the sale of the properties, bids will be received for the shares of the several companies held by the United States Motor Co. Bids must be accompanied by a certified check of $50,000 for each parcel and of $250,000 for the entire property.

The sale will be very much in the nature of a legal formality as, barring unexpected developments, it will be bid in by the Anthony N. Brady and Eugene Meyers interests, who were identified with the old company and who have been the moving spirits in formulating the plan of reorganization.

Walter E. Flanders, president of the Flanders Motor Co., who will become president and general manager of the reorganized United States Motor Co., already is inspecting the various plants, and it is generally understood that much of the Maxwell-Briscoe work which has been performed in the East, shortly will be taken over by the New Castle (Ind.) plant, and that the Flanders "six," which is the chief asset of the Flanders Motor Co., will be manufactured in the Brush runabout plant in Detroit, to which city the general offices of the United States Motor Co. will be removed. An office in New York, however, will be maintained.

Flanders already has issued a diplomatic announcement intimating that comparatively few of the employees and agents of the United States Motor Co. will be disturbed, on the principle that there always is room for good men, but as his own company maintains a large, complete and expensive staff, there is small doubt but that far-reaching changes will occur. In fact, W. F. McGuire already has been slated to become vice-president and assistant general manager, and W. M. Anthony, comptroller.

HESS RESIGNS PRESIDENCY AND LEAVES HESS-BRIGHT

Sells His Interests to German Ball Bearing Company—Bright Becomes President and Policy Not to Change.

Without intimation that anything of the sort was pending, Henry Hess, president of the Hess-Bright Mfg. Co., of Philadelphia, late last week disposed of his entire holdings in that company and resigned the presidency, which he has held since it was organized. He has been succeeded by his former partner, F. E. Bright, who previously was treasurer of the company. C. F. McCalla succeeds Bright as treasurer, and A. T. Bruegel has been elected secretary.

Hess's interests were purchased by the Deutsche Waffen-und Munitions Fabriken, which in 1904 conveyed to Hess the right to manufacture the DWF ball bearings in this country. It was during that year that the Hess-Bright Mfg. Co. was formed, starting with a small one-room office and gradually expanding until today it owns an imposing factory and 13 acres of land at Front street and Erie avenue, in Philadelphia. Mr. Hess's retirement will cause no change in the name or policy of the company.

De Schaum Out of Suburban Project.

William Andrew De Schaum, the exploiter, who early this year formed the Suburban Motor Car Co. in Ecorse, Mich., and who sketched a striking picture of the "model motor colony" which he proposed creating in that town, has ceased to be identified with the project. Temporarily the duties of general manager, which he filled, are being performed by W. H. Lankin, president of the company. Several other substantial men also have entered into its affairs and the undertaking now is entitled to more than respectful consideration. James A. Pratt, a Port Huron (Mich.) banker, and George E. Skelton, formerly connected with the Fletcher Hardware Co., of Detroit, are among the additions to the Suburban company's directorate. Its factory is in course of construction and ten Suburban cars already have been built and, according to the best accounts, are giving highly satisfactory results.

Metz Presents a Model at $395.

Motor cars at motorcycle prices, which often have been talked of, have been made realities by the launching, by the Metz Co., of Waltham, Mass., of the Metz "Special" at $395, a price which but a few years since was considered forever outside the realm of possibility. The new Metz, a two-passenger car, is priced at $100 less than the regular Metz model, but it includes many of the latter's features. It utilizes a 22½-horsepower, four-cylinder, air-cooled motor, has a Bosch magneto and is equipped with top, windshield, five lamps, gas generator, horn, pump, and the usual complement of tools, tire repair kit, etc.

Allens Finally Take on American Car.

After having handled imported cars since the teething days of the industry, Walter C. and Harry N. Allen, with N. Pohly Myers, have formed the A. M. A. Co., which will handle the Michigan "40" car in New York. The company has been incorporated with a nominal capital of $5,000 and will occupy a part of the premises 1934 Broadway, where the Allens are handling the Metallurgique car under the style Metallurgique Motor Co., with which the new account will not in any way interfere. Walter C. Allen is president of the A. M. A. Co., Harry N. Allen is vice-president and N. P. Myers secretary and treasurer

Canadian Dealer Gets Long Sentence.

Robert G. Larimer, president and treasurer of the Larimer Co., of Winnipeg, Manitoba, who suddenly disappeared from that city early in September last, after mortgaging his garage and leaving behind a trail of notes and other debts, will spend the next four years in a Canadian penitentiary. After his disappearance, he was trailed to Boston, Mass., where he was arrested and subsequently extradited by the Canadian authorities. At his trial in Winnipeg on Wednesday last, 14th inst., he was found guilty of embezzling $50,000, and was given a sentence of four years.

Lion Now Decides to Discontinue.

Despite the fact that after the fire on June 2nd last, which destroyed its plant in Adrian, Mich., it was stated that the Lion Motor Car Co. had secured another factory in that city and would continue operations, the company has decided to wind up its affairs and go out of business. The fire occurred at a most unfortunate time and so curtailed the Lion output, and otherwise interfered with its plans, that the selling season which just has closed practically went to waste.

Atlanta to Have a Tire Factory.

So far as known, the nearest approach to a real tire factory in the South is about to be established in Atlanta, Ga., by the Interstate Tire & Auto Co., which will produce a tire of that name. The necessary machinery now is being installed in a building that previously was employed in the manufacture of furniture.

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DEALERS MUCH DISCUSSED AT DETROIT MEETING

Their Power and Importance Admitted and Their Problems and Welfare Considered at N. A. A. M. Convention—Views Expressed by Men of Prominence Cover Wide Range and Point Way to Better Things.

In many respects, the general meeting of the National Association of Automobile Manufacturers, which occurred in Detroit on Thursday and Friday last, 14th and 15th insts., was, if not the most memorable gathering of the organization, one of the most interesting and instructive. The meeting, which followed a regular gathering of the executive committee on the 13th, was punctuated by a banquet at the Pontchartrain Hotel on the evening of the 14th. The open meeting comprised sessions held on both days. It was of uncommon interest, because members of the N. A. A. M., to whom had been assigned certain subjects, really spoke out in meeting and said things that were of real interest to the whole trade, dealers included; in fact, the dealer looms large in most of what was said.

Dealers' Problems Seriously Discussed.

During the business sessions, and at the banquet itself, one other point was strongly emphasized: that of the freight car shortage and its injurious effect on the trade and the necessity for co-operation on the part of manufacturers, dealers and railroads in the effort to minimize the bad results.

While of necessity every manufacturer who is affiliated with the N. A. A. M. has given attention to the dealer and his problem, the subjects discussed, and the manner of their discussion, made plain that never before have dealers and their problems received so much and such serious consideration at the hands of manufacturers. In the course of his address George W. Bennett, vice-president of the Willys-Overland Co., practically went out of his way to say that hitherto dealers had not received enough of it.

Indispensability of the Dealer.

"The dealer," he said, "is inseparably connected with the industry, but his welfare has received less consideration, perhaps, at the hands of the manufacturer than any other detail of the business;" but recognizing his indispensability, Bennett remarked that the "dealer's future is largely in our hands and is entitled to our most careful consideration."

Hugh Chalmers, president of the Chalmers Motor Co.; Ernest R. Benson, sales manager of the Studebaker Corporation, and practically all of the other speakers likewise paid tribute to the power of the dealer, and made clear that he is being reckoned with, or will be reckoned with, as he deserves to be.

Dealing with the subject to which he had been assigned, "Multiplicity of Models," Mr. Bennett, among other things, said:

Bennett's Ideas of Future Models.

"Little doubt exists in my mind but that eventually the marked successes of the automobile business will lie in specializing, each plant making that which best fits its demand, and making that model in the quantities to which its place in the automobile market entitles it. Before this happens, I am afraid that many requiems will have been sung, and the old axiom, "The survival of the fittest," will be strongly in evidence.

"The subject will not permit of thorough discussion without bringing into it the dealer's existence and welfare, past and present, and—what is more important—his future. All the pioneer manufacturers desired exclusive agents. To accomplish this it was necessary to supply each dealer with practically a complete line of cars. This custom on the part of some maufacturers largely continues, but I think it is in process of elimination. To make several models in a factory which is equipped to make not more than one satisfactorily, necessarily restricts the output of that plant, and divides the energies of its engineers, its operatives, and its selling force into several small channels, all of them considerably below par in efficiency because of such division. This division naturally extends to the advertising, and finally to the dealer, so that no individual in the organization—designing, making or selling—can conscientiously say, "We have the best there is in our class." If the statement is made of one model, it is at the expense of the other models, and obviously lacks the sincerity that would convince a buyer.

Tendency Toward Singling of Purposes.

"Experience has shown, however, that there exists a market for a certain number of cars at a certain price, each of a different class, and each appealing to a different grade of buyer. The growth of the industry shows that the most prominent manufacturers have realized this and are catering to the class they can best supply. I believe this development will become more marked, and that in a very few years each factory will limit its product to one model, with perhaps several styles of bodies interchangeable on the chassis.

"It may not always be possible for one manufacturer to profitably restrict himself to one chassis, but it will be possible, if more than one is considered necessary, to make a large number of the parts interchangeable, and only in this event would the production of two models be warranted or likely to be successful.

Harmful Effect of Many Models.

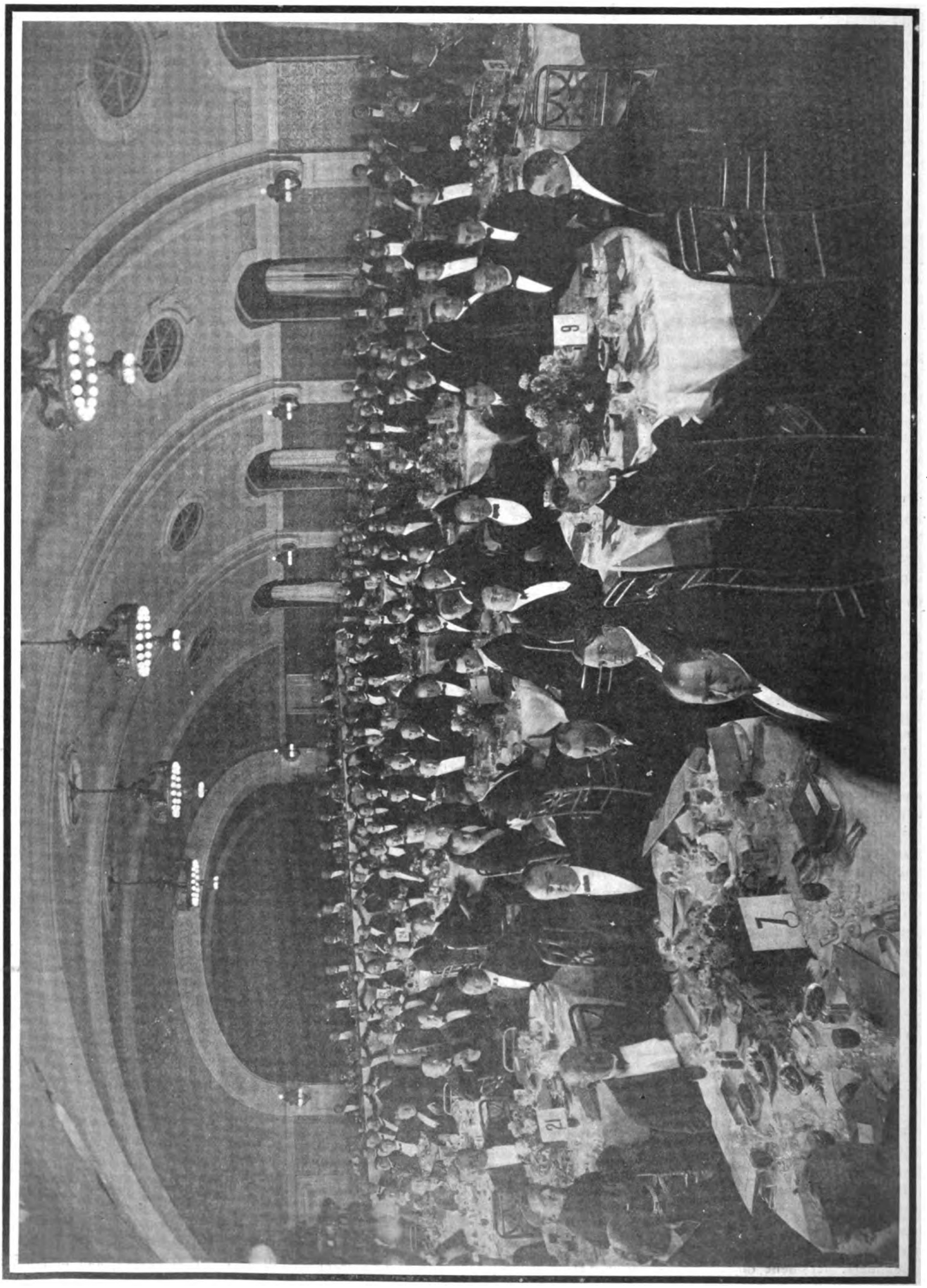
"I am fairly well satisfied there is no other equally large market available, the demands for cars of higher price being necessarily limited by the decreasing number of individuals whose incomes are sufficient to justify the greater expenditure. This decrease becomes more marked as the prices go up. . . . Obviously there are more manufacturers of automobiles than there are classes of purchasers, and the process of elimination, which it must be admitted is working fairly fast, must in the near future determine that ratio.

"Furthermore, the subject of subsequent service is involved so much that where more than one model is built, adequate service to the user is difficult, and consequently seldom satisfactory, and without that satisfaction complete success is impossible.

Limitations of Restricted Agreements.

"Dealers who are limited by their agreements with manufacturers to sell only the one line, are necessarily restricted in their markets and in their earnings. This course invites competition among dealers, adds to their number many who are irresponsible, and the final result is that but few of them at the end of the year show any profit. With the idea of concentration carried out by manufacturers, it would necessarily follow along to the dealers, and would result in each dealer having a line, no two models of which would be competitive in price, or similar in general detail, and which would enable him to cater to more than one of the

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FLASHLIGHT OF N. A. A. M. BANQUET IN HOTEL PONTCHARTRAIN, DETROIT, NOVEMBER 14

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markets in his territory; to speak enthusiastically of the merits of each of the cars he represents, and to finish each year with a substantial profit.

"The manufacturer cannot be successful unless his dealers are successful, and their interests are so interwoven as to be identical, and absolutely dependent each upon the other. I venture to assert that this phase will receive considerably more thought in the future than it has in the past."

"What Is a Sale?" Asks Chalmers.

"Some Selling Problems," was the topic handled by Hugh Chalmers, and it was handled in masterly fashion, too. It covered a wide range, touching the dealer and his problems, and the matters of over-production, used cars, weather effects and advertising. Mr. Chalmers said, in part:

"We are led to the first problem worth our while to consider by the question, 'What is selling?' What constitutes a sale?

"It seems to me that selling—selling a motor car, for instance—is something more than simply exchanging a motor car for a check or for so much cash. This may be merely a friendly transaction; or an exchange, fair or unfair, or perhaps a bit of charity or philanthropy. Selling, real selling, is the disposal of goods at a profit. Anybody can give goods away, but selling things at a profit is a job for good salesmen and good business men. Let us keep this point in mind.

Good Dealers Hard to Secure.

"Most of us do business through dealers, and most of us doubtless will continue to do business that way, in large part at least, for a long time to come. The dealer, then, and some of his problems represent our first big problem. It seems to me that automobile dealers are of more vital importance to both the manufacturer and the buyer than is the dealer in nearly any other line of business. The right sort of automobile dealer is harder to get than a good dealer in other lines—that is why he is so vital to the manufacturer. And, again, an automobile dealer is needed more by the buyer after the purchase than is the dealer in any other line—that is the public's vital interest. Both the manufacturer and the buyer, therefore, are anxious to have a good dealer and to have him remain so. A good dealer won't remain good very long unless he can make some money; unless his business will show a net profit. Either he will get out of the business, or he will simply drift along for a time, only to fail entirely in the end. How, then, can we help our dealers make money?

(Continued on page 32.)

N. A. A. M. FIXES NEW SCALE OF DEMONSTRATION CHARGES

Truck Body Weight Allowances Also Revised—Will Open Traffic Office in Detroit—Considers the Support of Racing.

Preceding the general meeting of the National Association of Automobile Manufacturers, held at Detroit, Mich., occurred on November 13th a session of the executive committee of that organization at which the principal topics brought up for discussion were the scale of charges for motor truck demonstrations under service conditions, and the schedule of body weight allowances for trucks of various standard capacities. As a result, the schedule of demonstration charge rates, adopted at the March, 1912, meeting of the N. A. A. M., and the schedule of body weight allowances, adopted at the June meeting, were revised and resolutions were adopted embodying the new scales.

Three new members were added to the roll—the Lippard-Stewart Motor Car Co., of Buffalo, N. Y.; General Vehicle Co., Long Island City, N. Y., and the Lauth-Juergens Motor Co., of Fremont, O.

The association also decided to establish a branch of its traffic department in Detroit, with a view of facilitating shipments from the Michigan factories and thereby assist in relieving the car shortage situation.

The executive committee also paved the way for the active entry of the N. A. A. M. into the realm of sport by agreeing to appoint a committee to meet a similar committee from the American Automobile Association with a view of taking over the work heretofore handled by the Manufacturers' Contest Association.

In drawing up the new scale of charges for demonstrations, the figures were based on the theory that the cost, per ton of load, of motor trucking should decrease coincidently with the increase of capacity of the truck; that charges made for demonstration work should bear a definite relation to the actual cost of maintenance and operation; and that such charges should be so fixed that, while they will be in excess of the actual cost of maintenance and operation of the machines, they will be less than the cost of doing the same work with horses and wagons.

Both the old and the new scales of charges for truck demonstrations start with the same figures, $10 per day for the use of 1,000-pound and 1-ton trucks. For all machines of larger capacity, however, the new list shows a reduction that increases with the capacity of the truck. Thus, the charges for a 2-ton truck under the old and the new lists, respectively, are $13 and $15; for a 3-ton truck, $15 and $20; for a 4-ton truck, $17 and $25; for a 5-ton truck, $19 and $30; for an 8-ton truck, $23 and $35, and for a 10-ton truck, $25 and $40. The charges for intermediate sizes are worked out in the same proportion. The approximate average daily operating costs per day, upon which the schedue prices are based, are, for the sizes referred to, as follows: For a 1-ton truck, $8.50; 2-ton truck, $10.50; 3-ton truck, $12.25; 4-ton truck, $14; 5-ton truck, $15.50; 8-ton truck, $17.75; 10-ton truck, $18.50.

As a means for conveniently obtaining figures on trucks of any size, and, conversely, for finding the size of truck capable of being operated within given figures, a series of curves was plotted, showing the operating costs and the rates to be charged under the new schedule.

The scale of allowances for body weights on trucks underwent considerable revision. The schedule is based on bodies of the stake type. The object of the schedule is to specify the weight that may be added to the total weight of the truck without decreasing the load capacity. For instance, a body allowance of 1,800 pounds is made for a truck having a carrying capacity of 10,000 pounds, which means that the total load carried by the chassis will be 11,800 pounds. If the body weight exceeds the scheduled amount, however, the load must be cut down correspondingly, so that the permissible gross weight will not be exceeded.

The schedule adopted and the old list are as follows:

Load Capacity (pounds)	New Body Weight Allowance (pounds)	Former Body Weight Allowance (pounds)
1,000	600	500
1,500	750	...
2,000	900	600
2,500	1,000	...
3,000	1,050	700
4,000	1,200	800
5,000	1,350	900
6,000	1,500	1,000
7,000	1,600	1,100
8,000	1,700	1,200
9,000	1,750	1,300
10,000	1,800	1,400
12,000	1,900	1,600
14,000	2,000	1,800
16,000	2,100	2,000
18,000	2,200	2,200
20,000	2,300	2,400

Disputants Adjust Tire Bill Suit.

After having disagreed so long that the Automobile Tire Co. went into the New York City Court with a bill of some $1,500 against the Times Square Automobile Co., both of New York City, the disputants found a means of adjustment. The suit was discontinued this week with the statement that the difference had been settled and the bill paid.

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BRITISH "GAS" TRUST TO INVADE AMERICAN MARKET

Shell Interests Buy California Company and Plan to Compete More Strongly With Standard Oil—$5,000,000 Involved.

Advices from California state that after years of effort the Shell interests, of England, whose Shell spirit dominates the "petrol" situation in Great Britain, practically have consummated negotiations whereby they will become more than ever a competitor of the Standard Oil Co., particularly in foreign fields. It is stated that the Shell interests virtually have completed a deal whereby they will take over the Union Oil Co. of California, and the output of the General Petroleum Co. and all or most of the other independent oil producers on the coast, the transaction, it is said, involving a consideration of $5,000,000.

Most of the Shell oil fields are located in Borneo and Sumatra, and though it is given out that the deal for the Pacific Coast fields will enable the British company to better combat the Standard Oil Co. in the struggle for Asiatic and European trade, other advices appear to make plain that the Shell spirit also may become a factor in the American market. Reports from several points on the Pacific Coast say that the American Gasolene Co. is handling the Shell spirit and is placing agencies, some of them with men hitherto affiliated with the automobile industry.

Changes Among Prominent Tradesmen.

George M. Davis, for several years advertising manager of the Pierce-Arrow Motor Car Co., of Buffalo, has resigned that office.

R. H. Losey has been transferred from the management of the Buick Motor Co.'s Indianapolis branch to the management of the branch in Atlanta, Ga. In his new capacity, he will have charge of the states of Georgia, Florida, Tennessee and parts of South and North Carolina.

Wallace Hood, former sales manager of the Everitt Motor Car Co., who, it was stated, purposed entering the retail trade in Boston, Mass., finally has decided to remain attached to the manufacturing end of the business. He has become sales manager of the Westcott Motor Car Co., of Richmond, Ind.

John B. Maus, who recently resigned the management of the Goodyear Tire & Rubber Co.'s branch in New York, has joined the United States Tire Co.'s staff in the capacity of special assistant to O. S. Tweedy, eastern district manager. New York will be his headquarters, but he will spend considerable time visiting United States branches in the eastern district.

E. A. Welch has been appointed sales manager of the Michigan Motor Car Co., of Kalamazoo, for the middle and southestern states—all of those east of a line drawn from Chicago to New Orleans. He will spend most of his time visiting the Michigan agents in his territory. While his new connection marks his entry into the automobile business, Welch has had ripe experience in other industries.

Palmer-Moore Acquires Plant for Trucks.

After having fully perfected its two-cycle variable-port motor, and, as the Motor World stated several months since, undertaken the application of the engine to motor trucks, the Palmer-Moore Co., of Syracuse, N. Y., has purchased the former plant of the Syracuse Stove Works in that city and at once will enter the truck trade in real earnest.

To permit of its enlarged operation, the company has increased its capital from $100,000 to $200,000. T. G. Meachem remains president of the corporation, T. W. Meachem vice-president and Charles L. Palmer secretary-treasurer.

The vehicle they will produce will be a 1,500-pound wagon, styled the Moore. The plant acquired is located on North Geddes street and comprises two main buildings, one 158 x 54 feet, the other 110 x 50 feet. In addition there is a power house 78 x 33 feet, a foundry 135 x 80 feet, with a wing 100 x 80 feet, and two smaller buildings.

Accident Causes Salesman's Death.

While endeavoring to make room for a farm wagon to pass on a highway near Lynchburg, Va., Thursday last, 14th inst., the car in which L. E. Hoffman, Southern district manager for the Franklin Automobile Co., was driving ran too near the edge of an embankment, toppled over and caused Hoffman's death; investigation disclosed the fact that his neck had been broken. His remains were interred in Cleveland, his former home, although he had resided for some time in Southampton, Pa. Hoffman was connected with the bicycle trade when it was at its height and was interested in the organization of the Royal Tourist Car Co., of Cleveland, O.

Detroiters to Market Reason Inner Tube.

Frank D. Hendrick and George Smith have formed the H. & S Sales Co. in Detroit and located at 541 Woodward avenue. Their chief account will be the Reason "compound pneumatic puncture-proof non-blowout inner tube," which recently was invented by Walter Reason of Pontiac, Mich.

BANKRUPTCY PROCEEDINGS BEGUN AGAINST TIRE CORE

Three Creditors Allege Fraudulent Transfer of Property and Preferential Payments — Declare Assets Are but $1,500.

Alleging that the Tire Core Co. of America, distributer of Dahl tire filler, located at Broadway and West 59th street, New York City, has assets of but $1,500 and within the past four months has "conveyed and transferred its property to persons unknown to the petitioners with intent to hinder, delay and defraud its creditors," three creditors yesterday, 20th inst., filed a petition in bankruptcy against the Tire Core concern in the Federal Court in New York City.

The petitioning creditors are the Wyckoff Advertising Co., of Buffalo, N. Y., with a bill of $1,890.55 for advertising incurred during June and July of this year; Vought & Williams, an iron and machinery firm, of New York City, with a claim of $252.51 for machinery; and Strauss & Co., Inc., of New York City, which recently secured a judgment of $71.51 in the Municipal Court for goods sold and delivered. The total is $2,214.57. The creditors also claim that the Tire Core company has "made preferential payments to parties unknown to the petitioners with intent to prefer such persons as creditors over its other creditors." The Wyckoff company some time ago commenced a suit in the Supreme Court for New York county for its claim.

When the Dahl Punctureless Tire Co. of America, which manufactures the Dahl product, reorganized about September 1 last and increased its capital from $100,000 to $6,000,000, several men in the Tire Core concern, which has the Metropolitan, New Jersey and New England rights, entered the Dahl corporation, and since great things were promised by the parent business it was assumed that the New York distributing house would follow in its path, but apparently its plans or prospects went awry.

Twitchell Discontinues Allen Suit.

Having disposed of his tire pressure gauge patent, No. 927,298, to A. Schrader's Son, Inc., of New York, Charles R. Twitchell this week discontinued his suit for infringement against the Allen Auto Specialty Co., of New York City, which was instituted October 26, 1911, in the United States District Court for the Southern District of New York. By arrangement with Schrader's Son, the Allen company will continue to manufacture its gauges under the Twitchell patent.

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The Week's Incorporations

Cincinnati, Ohio—Stern Auto Co., under Ohio laws, with $25,000 capital; to deal in motor cars.

Nashville, Tenn.—Southern Zilio Co., under Tennessee laws, with $100,000 capital; to deal in tire fillers.

Rochester, Ind.—Rochester Garage and Machine Co., under Indiana laws, with $15,000 capital; to operate a garage and machine shop.

Cleveland, Ohio—Auto Mart Co., under Ohio laws, with $10,000 capital; to deal in motor cars. Corporators — Edwin C. Piletz and others.

Cedar Rapids, Ia.—Barton Motor Car Co., under Iowa laws, with $10,000 capital; to deal in motor cars. Corporators—L. M. Ford and others.

New Orleans, La.—J. A. Landry Motor Car Co., under Louisiana laws, with $25,000 capital; to deal in motor cars Corporators —J. A. Landry and others.

Dallas, Tex.—Southwestern Motor Sales Co., under Texas laws, with $500,000 capital; to deal in motor cars. Corporators—L. A. Boli, C. C. Jones and others.

Petersburg, Fla.—Ramm's Garage, under Florida laws, with $100,000 capital; to deal in motor cars and operate a garage. Corporators—F. W. Ramm and others.

Birmingham, Ala.—Alabama Tire Repair Co., under Alabama laws, with $15,000 capital; to deal in and repair motor car tires. Corporators—P. B. Brown and others.

Chicago, Ill.—Bland Electric Garage Co., under Illinois laws, with $1,500 capital; to operate a garage. Corporators — Robert Bland, F. B. McClaughry, L. B. Norton.

Keeton, Ill.—Keeton Motor Co. of Illinois, under Illinois laws, with $60,000 capital; to deal in motor cars. Corporators—L. C. Roberts K. R. Roberts, W. C. Spenny.

Chicago, Ill.—Mollitor Tire Co., under Illinois laws, with $100,000 capital; to manufacture motor car tires. Corporators—B. S. Lippnicott, B. D. Towns, W. J. Higgins.

Cliffside, N. J.—Motor Express Co., under New Jersey laws, with $125,000 capital; to operate a motor delivery. Corporators—R. Dwiggins, O. M. Dwiggins, E. Dwiggins.

Chicago, Ill.—Hanway Starter Co., under Illinois laws, with $75,000 capital; to manufacture motor car accessories. Corporators —J. D. Rourke, R. C. Nicholson, I. Goldstein.

Chicago, Ill. — Electric Vehicle Battery Co., under Illinois laws, with $2,000 capital; to manufacture batteries. Corporators—Elbert C. Ferguson, Guy L. Eames, Ella O. O'Neil.

Gloucester City, N. J.—Auto Tire Repair & Supply Co., under New Jersey laws, with $100,000 capital; to deal in and repair motor car tires. Corporators—T. G. Golden and others.

Cleveland, Ohio—Hall-Miller Auto Co., under Ohio laws, with $5,000 capital; to deal in motor cars. Corporators—Joseph A. Freund, L. D. Greenfield, Charles Kovanda, J. A. Freund.

Wilmington, Del. — Macandaruba Tire Filler Co., under Delaware laws, with $1,500,000 capital; to manufacture tire filler. Corporators—H. Ralph Ewart, C. J. Jacobs, H. W. Davis.

Dover, Del.—Gasolene Safety Appliance Co., under Delaware laws, with $150,000 capital; to manufacture automobile devices. Corporators—J. J. Pheelan, W. Kaempffert, H. C. Sparks.

Chicago, Ill.—E. C. Demountable Wheel Co., under Illinois laws, with $2,500 capital; to manufacture motor car devices. Corporators—George A. Oleson, Victor G. Kropf, Sidney S. Gorham.

Chicago, Ill —Grove Auto-Truck Garage Co., under Illinois laws, with $25,000 capital; to operate a garage. Corporators—Thomas E. McNeil, Harry Lee McCurdy, William H. Neterer.

Cleveland, Ohio—Hupp Oil Co., under Ohio laws, with $25,000 capital; to deal in lubricants. Corporators—S. G. Kerruish, W. S. Kerruish, G. E. Hartshorn, George W. Spooner, N. B. Alford.

Cleveland, Ohio—Northern Ohio Motor Co., under Ohio laws, with $25,000 capital; to deal in motor cars. Corporators—Herbert W. Bell, E. L. Bennings, F. C Anselm, E. P. Eirich, C. L. Guthrie.

Ft. Wayne, Ind.—Eureka Garage Co., under Indiana laws, with $10,000 capital; to operate a garage. Corporators—E. C. Smith, Charles J. Buehr, T. B. Adams, A. C. Hobrock, H. D. Alderman.

New York, N. Y.—A. M. A. Co., under New York laws, with $5,000 capital; to deal in motors. Corporators—N. Pohly Myers, 16 West 71st street; Walter C. Allen, Harry N. Allen, 140 West 55th street.

Mt. Eaton, Ohio—Mt. Eaton Supply Co., under Ohio laws, with $60,000 capital; to deal in motor cars and supplies. Corporators—J. A. Yohn, F. B. Schlafly, Robert Kenwell, Albert Pfister and others.

Cleveland, Ohio—Motor Mechanism Co., under Ohio laws, with $25,000 capital; to manufacture motor cars and parts. Corporators—E. Younger, F. Castle. H. O. Evans, H. E. Gray, S. E. Sackerman.

New Brunswick, N. J.—Middlesex County Garage & Sales Co., under New Jersey laws, with $100,000 capital; to deal in motor cars and operate a garage. Corporators—H. A. Boyd, J. Mershon, C. A. Oliver.

New York, N. Y. — Tuxedo Tire Co., under New York laws, with $8,000 capital; to deal in motor car tires. Corporators—Augusta Horrmann, 429 East 157th street; Emilie Waltenberg, Adolph Waltenberg, 558 Mott avenue.

New York, N. Y.—Foreign & Domestic Automobile Repair Co., under New York laws, with $10,000 capital; to repair motor cars. Corporators—L. O. Rothchild, 251 West 138th street; Max Kaplan, 133 Amsterdam avenue; Otto A. Deffaa, 3013 Third avenue.

New York, N. Y.—Miller-Brisben Co., Inc., under New York laws, with $25,000 capital; to deal in motor cars. Corporators —Warren A. Miller, 30 West 63rd street; Irving Jaffe, 1402 Broadway; John M. Brisben, Port Richmond, N. Y.

Brooklyn, N. Y.—H. J. & S., Inc., under New York laws, with $1,000 capital; to manufacture and deal in rubber goods. Corporators—Joseph Mattison, 162 East 66th street; Henry Jacobsen, 440 88th street; Siegfried Glass, 1367 47th street.

New York, N. Y.—Reliable Auto Parts Co., Inc., under New York laws, with $2,000 capital; to deal in motor car parts. Corporators—Adolph J. Lunde, 150 Vermillyea avenue; Hubert Hansen, 2080 Ryder avenue; Adolph Sachroff, 4001 3d avenue.

New York, N. Y.—Seager's Garage, Inc., under New York laws, with $1,000 capital; to deal in motor cars. Corporators—James

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H. Seager, 287 Myrtle avenue, Flushing; Albert Seeley, 465 Fulton street, Brooklyn; Henry B. Ecerson, 255 Sanford avenue.

Chicago, Ill.—Hanway Starter Co., under Illinois laws, with $75,000 capital; to manufacture motor starters. Corporators—John D. Rourke, Isadore Goldstein, Robert S. Nicholson.

New York, N. Y.—Stegman Motor Truck Co. of New York, Inc., under New York laws, with $25,000 capital; to deal in motor vehicles. Corporators—John G. Anderson, 780 Elton avenue; James G. Smith, 615 West 162nd street; John A. Kent, 140 West 104th street.

Brooklyn, N. Y.—Brooklyn Auto Top & Supply Co., under New York laws, with $5,000 capital; to manufacture motor car tops and covers. Corporators—Beatrice H. Matton, 442 Halsey street; Jacob Seigel, 23 First avenue; Edgar E. E. Chinock, Jr., 116 Monroe street.

New York, N. Y.—Snowden Rubber Co., under New York laws, with $1,000 capital; to manufacture and deal in tires. Corporators—Wesley T. Snowden, 15 St. John's Place, Brooklyn; Edward J. Landgraff, 213 Court street, Brooklyn; A. Bidley Galitzka, 135 Neptune avenue, Brooklyn.

Recent Losses by Fire.

Harvard, Ill.—Manly Bros., garage destroyed. Loss unknown.

Springfield, Ill.—Capitol Auto Co., South 4th street, garage and 17 cars destroyed. Loss, $50,000.

Kansas City Mo.—Searchlight Gas Co., plant destroyed by gas explosion and fire. Loss, $40,000.

Detroit, Mich. — Rock's Automobile School, 1300 Woodward avenue, garage damaged. Loss, $6,000.

Philadelphia, Pa.—Morris Goldstein, 1413 Race street, garage and repairshop destroyed. Loss unknown.

Pittsburgh, Pa.—Pioneer Motor Car Co., 5864-66 Baum street, damaged. Loss, $30,000. Iron City Tire & Repair Co., 5868 Baum street, smoke and water damage. Loss, $500. Eddie Bald Automobile Co., slightly damaged.

Changes of Capitalization.

Detroit, Mich. — Williams Bros. from $150,000 to $300,000.

Detroit, Mich.—Monroe Body Co. from $500,000 to $420,000.

Chicago, Ill.—Radal Auto & Garage Co. from $1,000 to $100,000.

Davenport, Ia.—Iowa Auto & Tire Co. from $25,000 to $100,000.

Chicago, Ill.—Chicago Bearing Metal Co. from $500,000 to $1,000,000.

DURANT FINALLY SETS $1250 AS PRICE OF LITTLE "SIX"

Not So Low as First Anticipated but Still Lowest on Market—Specifications of the New Comer Are Impressive.

Although the price of the Little "six" is not to be "$1,000, fully equipped," as was announced soon after the advent of the Little "four," its price is to be so very little more than that sum as to cause more than one person to sit up and take notice; it will sell for $1,250, and the equipment will include, in addition to a top and windshield, a Gray & Davis electric lighting system and an engine starter. The Little "six" is virtually a smaller edition of the smallest Chevrolet "six" and is produced by the Little Motor Car Co. of Flint, Mich., under the direct supervision of W. C. Durant, who also controls the destinies of the Chevrolet Motor Co., these two companies forming the nucleus of his $65,000,000 Republic Motors Co. of Delaware, which still is in active process of formation.

The Little "six" is quite different from its immediate predecessor, the Little "four," and will be built in but one style—a five-passenger touring car of exceptionally modish lines. It will mount an L-head motor measuring 3¼ x 5 inches, with the cylinders cast in two blocks of three each and the transmission elements will include a leather faced cone clutch, three-speed selectively operated Covert combined gearset and rear axle and three-quarters platform rear springs; double internal expanding brakes are mounted on rear wheel drums. The wheels are shod with 32 x 4 inch tires mounted on demountable rims.

Dealer Drawn into Ownership Fight.

Names of high social connections figure in the action of Dr. Fred H. Humphries against the Pope-Hartford Auto Co., of New York City, which was discontinued last week immediately after the argument in the case had been made and it was ready to go to the jury in the Supreme Court for New York county. The decision to discontinue was made following a conference of the attorneys and the judge.

The action was to establish the ownership of an automobile. It had been turned over in exchange to the Pope-Hartford company by Charles Lee Bole, president of the Inward Farms, of Beal Beach, N. J., and after this transaction Dr. Humphries, who resides in Morristown, N. J., and is known as the concocter of "Dr. Humphries' Specific," said the car belonged to him. He replevined it and then, to establish ownership, was compelled to bring the action. His decision to discontinue the fight automatically cancels his claim on the car in dispute.

General Vehicle With $10,000,000.

To facilitate far-reaching plans which are afoot, the General Vehicle Co., of Long Island City, N. Y., has been dissolved and has been succeeded by The General Vehicle Co., Inc., which was incorporated this week, under the laws of New York, with an authorized capital of $10,000,000. The new corporation, of course, will take over the property of the old company, and, so far as can be learned, there will be no change of officers or policies. The company now is erecting two additions to its plant in Long Island City, which will cost approximately $750,000, and it is known that it has in view a very considerable enlargement of its branch house system.

Dealers at Law Over Stock Transfer.

Disagreement over a stock deal is the basis of a legal action instituted in Duluth, Minn., by William Buchanan against the Duluth Automobile Co. Buchanan asks for $412.25, claiming that he transferred 30 shares of the company's stock to the company on January 29 last, for which he was promised $2,000. Part of the payment, he states, was to be the assumption of an obligation of $1,487.75, due before August 1, and the remainder to be in cash. He claims to have received but $100 in money.

Ward to Represent Father in King.

Artemus Ward, Jr., of New York, whose father recently purchased the assets of the King Motor Car Co., of Detroit, will directly represent the Ward family in the management of the company. The other department heads are as follows: J. G. Bayerline, manager; T. A. Bollinger, factory manager; T. P. Chase, engineer; J. B. Siegfried, purchasing agent; W. L. Daly, sales department; J. Mohardt, division superintendent.

Whitesides Seeks Support for "Ironsides."

V. F. Whitesides, designer and superintendent of the Whitesides Commercial Car Co., of New Castle, Ind., has relinquished all connection with that company and is seeking to enlist Indianapolis capital in a new truck which he has designed. He already has chosen a name for it—"Ironsides."

Michelin Adding 46,000 Feet to Factory.

To take care of its ever increasing trade, the Michelin Tire Co. is adding a concrete wing to its already immense plant in Milltown, N. J. The addition will afford 46,540 square feet of floor space.

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THE MOTOR WORLD

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

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R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN E. F. HALLOCK

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Advertising Manager
HOWARD L. SPOHN LOUIS R. SMITH

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W. H. TRIPP, 1001 Ford Building, Detroit
GUS. H. JOHNSON C. H. HANDERSON
DETROIT, 1001 Ford Building CHICAGO, 1441 Monadnock Block
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STATISTICS THAT MAKE FOR MISCHIEF.

He was a wise man who declared that there are lies, damned lies, and statistics. Usually statistics serve more useful purposes than the other varieties but frequently they are more far-reaching in their mischievous effects. However that may be, statistics bearing on the number of automobiles in use long have proved a fruitful field for the ready reckoners.

For instance, one of our esteemed contemporaries, which is much given to that sort of thing, has compiled what may pass as a census, which shows that on October 1st last there were in use in the United States no less than 990,738 automobiles. It devotes four pages to a more or less interesting array of charts to support its assertions.

Cars of Which No Account Is Taken.

Despite the formidable presentment, however, the statistics are as undependable as most of those that previously had seen the light. For little or no account is taken of cars registered by non-residents, or of the large number of used cars which pass to new owners in the course of a season, nor of the motorcycles which are included in the registrations of several States, Indiana, among them.

In New York, for example, 103,000 cars, in round figures, had been registered up to October 1st. But even in New York, which is conspicuously and generously lax in the enforcement of non-resident requirements, there were no less than 3,900 registered plates issued for such "foreign" cars, and the number of duplicate registrations representing used cars is beyond estimate.

Records Do Not Permit Correct Estimates.

In Massachusetts, which was credited with approximately 49,000 cars, 900 are represented by non-residents and, according to a semi-official estimate, 7,000 by used cars which had changed owners. In New Jersey—which is keen for non-residents' dollars—in Rhode Island, Connecticut and Pennsylvania, to cite other instances, the public records are not kept in such a manner as to permit even the authorities to estimate the number of non-resident or other duplicate registrations that are carried on their books.

Taking all things into consideration, however, it is fairly safe to say that the estimate of 990,738 cars, which, according to the ready reckoners, represents a total of 226,670 new registrations during the first nine months of 1912, is between 100,000 and 200,000 outside the truth.

Wide Elasticity of Factory Outputs.

Even more pernicious than these figures, however, is the estimate of the 1913 output, compiled and widely heralded by a publication which styles itself an "automobile trade journal." These statistics, which scarcely are worthy of the designation, place the output at the staggering total of 627,650 cars, which, according to the publication responsible, will represent an increase of more than 300,000 cars.

Although it is notorious that factory outputs are almost as elastic as are the circulations of many publications, the statistician apparently has accepted as gospel truth figures that had been supplied by factory romancers. Without citing specific instances, it is well known that in the case of several manufacturers whose names are given, the estimates are from 33 1-3 to 50 per cent. higher than those represented by contracts placed for material or equipment. In several cases, the factories named are of such proportions that not by the wildest stretch of the imagination could they produce the number of cars credited to them, and in at least one instance a factory which is set down as preparing to produce 3,000 cars next year, actually is preparing to go out of business.

Enormous Outputs Cause for Grave Concern.

Some of these things are so apparent on their face, and others are so readily learned by those in real touch with the trade, that the guess of an output of 627,000 cars is so wild and so exaggerated that the wonder is that any publication should be ready to stand sponsor for it. If such an enormous output really was in prospect, or was possible, the industry would have cause for grave concern. Happily, the production is not likely to more than approximate two-thirds of the exaggerated estimate. To the unknowing, such statistics may appear wise, but their effect on the trade itself is most mischievous. Not only do they furnish food for dreamers and schemers, but they are likely to throw off their balance the more guileless manufacturers of parts and accessories who share the belief that figures do not lie, and thereby cause needless over-production in certain branches of the industry; and over-production is the disease most to be dreaded in any commercial pursuit.

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PROPOSE ASSOCIATION TO BACK AUTOMOBILE RACING

New York Dealers Endeavoring to "Save" the Sport in Vicinity of Metropolis—$10,000 Corporation Under Way.

Whether or no automobile manufacturers' support of racing eventually is withdrawn entirely, which, in view of present conditions, seems not unlikely, the sport in and around New York City at least is not likely to suffer very seriously, for the dealers themselves have stepped into the breach and have thrown out a life line to keep the sport alive; which sort of local support is, in the opinion of many persons, the truly logical solution of the situation.

The life line, figuratively speaking, is a dealers' association which it is proposed to form in order to keep the automobile conspicuously in the public eye and, not without reason, racing and other forms of contests have been chosen as the best means to the end. According to "feelers" tried out by the Motor Dealers' Exhibit Co., in the form of the two last racemeets held on the Brighton Beach race track in Brooklyn, the public not only is interested in automobile racing as a sport but is anxious for it, and for this reason it is proposed that the dealers revive it in such a way that the profits accruing to the promoters will be merely incidental to the benefit derived from the publicity gained.

The association which it is proposed to form, for which purpose a meeting was held at George Rector's hostelry yesterday (Wednesday) afternoon, is virtually an outgrowth of the Motor Dealers' Exhibit company, which comprises George Robertson, W. C. Poertner and Ed. McShane, and which was formed for the specific purpose of promoting racemeets within the Metropolitan district. At the meeting were gathered about 30 prominent New York dealers and at times enthusiasm ran high.

According to tentative plans, there will be formed a stock company with $10,000 capital divided into 100 shares valued at $100 each, no one make of car or accessory to be represented by more than three shares: a fixed percentage of all profits will be placed in a reserve fund and the balance disbursed from time to time in the form of dividends. The meeting, at which J. C. Wetmore presided, was called primarily to discuss ways and means, and substantially the only business that was conducted consisted in the appointment of a committee of seven, the duties of the committee to be the drafting of a constitution and by-laws. The committee appointed consists of Geo. Robertson, W. C. Poertner, Ed McShane, Burton Brown, J. C. Nichols, E. Lascaris and I. M. Uppercu. The committee was instructed to report on Monday afternoon next at 3:30, when it is expected that the association formally will be launched.

Little Known Features of Well Known Cars

As a rule, it is only when a prolonged journey is in prospect that the spare tire complement is increased to three spares; generally but two, or a single extra, are carried, and on most cars provision is made for carrying only two With the Columbia coupe shown in the photograph, however, provision has been made for carrying six



COLUMBIA TIRE CARRIERS.

spare tires, which means, if demountable rims are used, that even if the motorist should be so very unfortunate as to rupture all four shoes, but very little time need be lost, and the car still would be as well fortified against "tire luck" as the average car.

As can be readily gleaned from the illustration, the running board on either side is cut short and the metal which forms the rear mudguard is continued in a graceful inverted curve until it meets the shortened running board. Three tires fit snugly into this dip and are held in place by tire irons positioned on the body and on the mudguard. The tires are located far enough back to prevent interference with the door.

Exactly reversing the order of things, the Thomas B. Jeffery Co this week removed from West 62nd street, New York City, to 1759 Broadway, which previously was occupied by R. M. Owen & Co., the Reo distributers. Owen & Co. have removed to 19 West 62nd street.



November 16-23, Atlanta, Ga. — Second annual show of the Atlanta Automobile and Accessory Dealers' Association in the Auditorium and Taft Hall.

November 26-30, Grand Rapids, Mich.—Fourth annual show of the Grand Rapids Automobile Dealers' Association in the Klingman Exposition Building.

December 2-3, Chicago, Ill.—Annual meeting of the American Automobile Association in Auditorium.

December 7-22, Paris, France — Paris Salon.

January 4-11, Montreal, Can.—Annual automobile show in the Drill Hall and Armory, under the auspices of the Automobile Club of Canada.

January 6-11, Cleveland, Ohio—Cleveland Automobile Show Co.'s exhibit in the Central Armory.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, Philadelphia, Pa.—Philadelphia Automobile Trade Association's exhibit in the First and Third Regiment Armories.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

January 27-February 1, Detroit, Mich.—Detroit Automobile Dealers' Association's Show in the State Armory.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

February 10-15, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Commercial vehicles only.

February 10-15, Minneapolis, Minn.—Minneapolis Automobile Show Co.'s show in the National Guard Armory.

February 17-22, Kansas City, Mo.—Kansas City Automobile Dealers' Association's show in Convention Hall.

March 3-8, Pittsburgh, Pa. — Pittsburgh Automobile Dealers' Association's show in Duquesne Garden.

March 24-29, Indianapolis, Ind.—Indianapolis Automobile Trade Association's show.

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Solutions of The Used Car Problem

In Competition For

Motor World's Cash Premiums of $50, $25, $15 and $10 For the Four Best Articles Dealing With the Subject.

By GEORGE K. WADSWORTH, Cleveland, O.

The solution of the used car problem will effectually end the greatest handicap to the automobile industry today. It cannot be denied that competition has become so keen and so many purchasers buy "propositions" instead of automobiles, that a dealer has no chance whatever to close a deal involving a "trade" unless he over-allows on the used car, and the one making the best allowance usually lands the order, regardless of merit.

In any community large enough to support representation of several cars, an ideal plan is suggested as follows:

A corporation is organized to engage in the business of buying and selling used cars, to be financed and controlled by the dealers and factory branches, doing a retail business in the community. This company is to be managed by a competent and disinterested man, who is capable of appraising the market value of any used car, and the capital stock to be an amount sufficient to conduct the business without embarrassment. The company would then be a "clearing house" operated for the mutual benefit of its stockholders.

The owner of a used car, negotiating for the purchase of a new car would be referred to the "clearing house," where a price would be set on his car and a credit memorandum for the amount issued to him, to be honored by any dealer or factory branch for a like amount, in part payment for a new car. The purchaser would then have the option of accepting the value or selling his car privately and paying cash for the new car.

Monthly settlements could be made to stockholders on cars sold, and quarterly or semi-annual dividends declared from profits.

The advantages of this plan are manifold:

1st. All competitive bidding on a used car will be abolished.

2nd. The practice of buying a "pile of junk" for the purpose of turning it in on a trade will be abolished.

3rd. Used cars will find ready sale because they will be priced according to actual value and not according to allowance, as at present.

4th. Salesmen can concentrate all their efforts on the sale of new cars, doing away with the necessity of making two sales for one.

5th. Dealers will make the full legitimate profit to which they are entitled on every sale.

Various modifications of this plan and details of operating it would have to be made to adapt it to local conditions. The automobile industry is of such dignity and proportion that it can well afford to give serious thought to the abolishment of its greatest evil—the "used car problem"—and the above plan affords an absolutely satisfactory solution of the same.

By ALBERT STRITMATTER, Norwood, O.

Used cars should be regarded as a means to the sale of new cars, not as an evil. We cannot expect to sell new cars to owners of old cars—except as we are able to see that some one else gets the old cars. The best buyers of used cars are men who cannot afford to pay the price of new cars, and the best buyers among these men are those who can used the used cars in their business, as, for instance, the young real estate agent.

If the dealer thinks certain lines of business—the real tstate business, for example—afford the best means for disposing of second-hand or used cars, he should circularize those businesses. Otherwise he should use lines or display ads. in local newspapers.

It is poor policy to display used cars in show windows, to the detriment of new cars, or to display them at all unless the used car is in good, presentable shape. "Trade in" value should be such as will permit resale at a profit. Used cars should not be a basis for cutting price on new cars.

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THE SCIENTIFIC DEALER.

Study and Thought That Make for Better Buying as Well as Better Selling—— Cold-Bloodedness as an Asset.

Scientific management is a term you hear much about nowadays, and you are going to hear much more of it, because it is becoming more and more a factor in manufacturing and retailing operations. Competition, and the stern necessity for producing a better article at a lower price have brought it into being.

Orderly Classification of Facts.

To some merchants this talk about "scientific management" sounds like "highbrow" stuff. And yet some of the very men who allude to it in that way are employing scientific methods in their business, though they do not know they should be called scientific.

The science of anything is nothing more nor less than the orderly arrangement or classification of all the known facts in connection with the same. While that sounds simple you can see at once that it is a mighty big job but supremely worth while; because once you classify all the known facts in connection with your business and arrange them in orderly sequence you have accomplished something that brings you out from the ranks of guessers into the ranks of those who not only **know,** but know they know.

The automobile dealer who is working scientifically does not bump his head against a stone wall before he finds out that he is doing the wrong thing. He does not delude himself with dreams and hopes and other intangible things; he studies the facts and gets to the rockbottom of things. Every move he makes is based on knowledge.

Such a dealer will not, for example, take on a line of cars just because the salesman wants him to, or because some other dealers in his town are selling similar lines with success. He takes on a line only when he knows there is a market for it. He goes over his whole field. He studies the savings bank deposits per capita. He finds out the exact number of cars in his territory in use. He gets a line on the age of these cars. He doesn't carry this in his mind; he puts it on paper. He studies the industries of his locality; the tendencies of the people; their habits of spending, and makes his selection of a line and his investment in his buildings on the basis of known facts.

Factory Attitude a Big Factor.

The scientific dealer picks a car that he knows represents value. He satisfies himself not only of the ability of the factory to make deliveries when wanted, but he also investigates its method of handling its customers. Does it treat them right, or does it carry a chip on its shoulder for every dealer who visits the factory? Is its sole object to get rid of so many cars or are they sincerely and helpfully interested in him and his success? Are they so eager for business that they will let him take on the line when their own good sense tells them he is not the man? That he has not the facilities, nor the capital to handle it?

Concerning the Selection of Cars.

In other words, are they building permanent business relations or do they expect to do business with him merely for a season during which they will squeeze him dry while establishing the sale of their cars in his locality? What sort of sales help will the manufacturer give him? And last, greatest and most important of all, does the car represent real, tangible, dollar-for-dollar value? Is it built right? Are the "bugs" worked out of it? In other words, can he afford to put his good money and good name back of it, confident that it is not going to cost him all his sales profits to make good? If the car cannot answer every question, he won't touch it, even if all the other answers are satisfactory.

The scientific dealer knows that if the factory is not building the best kind of car that can be built for the money, and a good, reliable car at that, he cannot afford to sell it; further, he knows that salesmanship is nothing more nor less than the teaching of values; and how can he teach a customer that the dollar-for-dollar value is there unless it is there? True, he might "get away with it," but he knows that real success is built on fundamental honesty and therefore unless the value **is** there so that it can be seen and shown, he might just as well forget it.

Thus, while he concerns himself with the factory and its policies, so that he "knows where he is going to get off," he concerns himself most with making sure that the value is in the car.

Part Played by Imagination.

The scientific dealer is cold-blooded; he does not deal with sentiments; he deals with business facts. The factory salesman may tell him that a certain car would be a wonderful seller in his town, but that would not convince him. He has all the facts concerning his terrirtory tabulated; he knows fairly accurately what every other dealer is doing. Therefore he does not imagine he is going to do any bigger business than he knows he will do.

He uses imagination in his business, but does not let his imagination govern. He knows what the business possibilities are and he knows he will get only the share that his car and his efforts earn for him. He plans accordingly, but always along the line of known facts.

Looking Into Service Costs.

The scientific dealer knows in advance what his "service" is going to cost him. He does not wait until the end of the year only to discover that his free service has exceeded his sales profits and encroached on his income from oil and gasolene. He sets a free service limit and lives up to it. It is

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enough properly to take care of the cars he sells, but not so much that it seriously impairs his profits.

He does not cut prices. He knows that cutting prices is throwing away profits that he absolutely must have in order to exist and take care of his trade. He knows that a cut price discounts every car he has on his floor or on order; he does not let others set his prices or his profits. He does not need to, because the value is present and he can prove it to his worst competitor.

Common Sense and Facts in Selling.

The scientific automobile dealer is not a business marvel; he is simply a man chuck full of common sense, who has a head and uses it. He does well and thoroughly what another man half does; he makes his moves on the basis of real information and facts instead of on the basis of "thinks." He knows that if he knows what he wants to know he can find it out; someone has the information and he can get it. If no one else has it he gathers it for himself.

But always the scientific dealer puts knowledge and sorting of facts first—and you cannot stop him from being successful. There are going to be more scientific dealers to-morrow than there are to-day. And that means that there are going to be still fewer near-successes retailing automobiles.

SOME WIDEAWAKE MAXIMS.

Most factory ads are good; but good ads are no good unless they appear in the papers.

If you think your competitor is making a sensation with his new line, don't worry. Get busy.

There are no "off" seasons for the dealer who works. Seed sown in winter can be harvested in spring.

Don't make announcements of new cars till you have at least one demonstrator. It's like inviting people to a feast and overlooking the food. No chance of cashing in.

SHOW WINDOW INVESTMENTS

Window Space Costs Money and Should Be Made to Yield a Return—Suggestions for Autumnal Decorations.

If a dealer contracted for space at the county fair he would not hesitate to spend at least a modest sum to render it attractive, and yet, it is more than likely that only a small portion of the fair attendance would be possible customers. Nevertheless it still would be good business to make such an investment, on the basis that "what is worth doing, is worth doing well."

Getting the Value of Show Windows.

It is wise, therefore, for the automobile dealer who occupies a store to consider that he is paying for the privilege of having a display window; in other words, that a display window actually represents a certain portion of his rent investment. As it costs money, why not use the window and make the exhibit as attractive as possible? And what will make it more attractive than a display a little out of the usual and in harmony with the spirit of the season?

With the arrival of Thanksgiving, for instance, comes an opportunity for making a special Thansgiving window display that should be seized eagerly by the alert, business-seeking automobile dealers.

Incorporating the Thanksgiving Spirit.

Here are two suggestions:

(1) Have windows washed and made spotlessly clean and decorate them with sheaves of corn, pumpkins, apples, etc., grouped artistically along base of window. Purchase colored tissue paper and cover electric light bulbs with it to give a soft, orange-yellow effect. Then move the car well up towards the window. If the car has electric lights all lamps can be covered inside with orange paper and the light turned on after nightfall. The effect will be striking. This is thinking and to use their imagination. Every dealer has not the same materials with which to work, consequently no suggestion can be made that will exactly meet all conditions, but there is no dealer who cannot do something, if he is but possessed of the will to do it.

Naturally, a neat, artistic sign stating that "All users of ——— cars are numbered among the thankful ones" or bearing some other thanksgiving thought would not be out of place.

"Autumn Hunting" Another Scheme.

(2) Secure the co-operation of the window dresser for the local clothier and make a combined hunting and Thanksgiving scene. Use corn sheaves for background, strew quantities of the material over the floor and distribute a few pumpkins here and there. Then have lay-figures dressed in clothing furnished by the local clothier, seated at wheel and in tonneau with guns conveniently placed, etc. Any good window dresser, if given a few automobile rides gratis, undoubtedly would be glad to cooperate with the local dealer towards getting up an artistic and well planned display.

The point is, that something out of the usual will attract more than usual attention, create comment and not unlikely secure notice in the local papers, all of which is good advertising.

WATCH THE WASH AND POLISH.

It is trite to say that it is "the little things that count," yet the truthfulness of the saying is its own eternal commendation.

A poor job of washing and polishing has driven many a car owner away from a garage, when a good job might have kept him there and ultimately led up to the sale of a car.

Perhaps washing and polishing doesn't pay, but it is certain that it pays least when indifferently done.

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RIVALING DRYGOODS STORE IN WINDOW DISPLAY

Methods of "Touching Up" and Decorating That Draw in Other Lines Applicable in Automobile Salesroom—Dealer Who Attracted Attention to His Cars and How He Accomplished It.



ATTRACTIVE TREATMENT OF COMPARATIVELY SMALL WINDOW BY THE FRANKLIN REPRESENTATIVE IN CLEVELAND

Pushing a car into a front window and letting it stand for the inspection of those who care to stop to look is one form of window display; but almost any dealer will admit, if the matter is brought to his attention, that a little "fixing up" will make the display more attractive and cause many more people to look at it. Adding real effectiveness to display by the exercise of a little ingenuity and decorative skill, however, has been ably demonstrated by several dealers representing the Franklin Automobile Co. The accompanying illustration is a fair sample of the displays that have been worked out in a number of cities by these dealers.

The view shown represents the window of the Franklin Automobile Co., of Cleveland, O., of which C. H. Rockwell is manager. The window itself is not over large and the one car of itself would be little noticed; Rockwell, however, elevated the car to the level of the bottom of the glass and completely enclosed the window space on the top, bottom, sides and back with an inexpensive but neat white cloth, arranged in folds. Autumn leaves and tree branches with a fern or two were placed in just the position and quantity to add a touch of autumnal atmosphere to the scene. A vase of cut flowers and a bow of white ribbon placed on the running board at the front door served as an attractive break in the expanse of polished body and detracted nothing from the car's general appearance.

Viewed from the street, the entire effect was not unlike that of a large picture, and when the concealed window lights were turned on at night every detail stood out strongly against the white surroundings. The display was altered each week, a new car or a new arrangement preventing the loss of effectiveness because of monotony.

Exploding Tube Injures Two Men.

Two members of the Hartsdale (N. Y.) fire company were severely injured Monday last, 18th inst., while repairing an inner tube of the company's chemical engine. Walter Townsend and Harold Drury, the men in question, had repaired the tube, replaced the tire and blown it up and were putting on the rim when the tube exploded and the heavy rim was thrown with great force against the firemen. Drury's skull was fractured and Townsend was cut on the head and leg.

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"KEEP POSTED ON TRADE DOINGS," SAYS REILLY

Meets New Salesman in Sales Manager's Office and Criticizes Former for Lack of Trade Knowledge—Declares Such Information Path to Higher Things and Its Lack Inexcusable.

"Say, Jim!—Hello, Reilly! How are you, Mr. Lawall?—What's the Leonard transmission patent?" questioned the impetuous Advertising Manager as he rushed into the Sales Manager's office and blurted forth this inquiry, interspersing it with salutations to Reilly and the new traveling representative, Mr. Lawall, who was about to enter the company's service in a hitherto not over productive terrirtory. The Sales Manager kept right on signing letters and answered, at the same time:



"WHERE'D YOU GET THAT ALLEGED AUTOMOBILE SALESMAN?" DEMANDED REILLY

"Leonard transmission patent? Why? What are you going to do—buy it?"

Advertising Man Seeks Trade Information.

"Hardly" answered the advertising man. "I got into an argument with one of the engineers as to the desirability of four-speed transmissions and told him I thought one would make our cars more popular than they are. He said a four-speed was good but that he wouldn't want to go too deep into it until the Leonard transmission patent had been adjudicated. I remember reading something about it in some trade paper, but can't recall just what or when."

"It's the patent that is claimed to cover a transmission with direct drive on an intermediate speed," explained the Sales Manager, "such as ordinarily is the case in present-day four-speed gearsets where there is an indirect drive above direct. A man named Leonard owns it; he is a manufacturer near New York City. He now has suits in the courts and is endeavoring to prove that his claims are good."

"Thanks; I knew you'd know," was the advertising man's comment, as he departed as quickly as he had entered.

"Is that patent any good?" asked the new traveling man, after the door had closed.

"Can't tell until its adjudicated," answered the Sales Manager.

"Dyer made good on his," interposed Reilly.

"Who's Dyer?" asked Lawall.

"Oh, that's a long story," explained Reilly, "but his patent covers the sliding transmission that we are using. And about the Leonard—that story was published only recently." As he talked he had been looking through a pile of trade papers on the Sales Manager's table, and after a moment he handed Lawall a Motor World of Sepember 19, the first news page exposed. There in large type was the head: "Leonard's Transmission Patent Assumes Increased Importance."

Lawall read it without comment. Then he looked through the paper, tarrying for a glance at several other pages.

Knowledge Mine Revealed to Salesman.

"Pretty good stuff!" he at length exclaimed. "It makes me think of something I want to ask the Advertising Manager; pardon my leaving," and laying down the paper, he went to interview the advertising man.

"Where'd you get that alleged automobile salesman?" demanded Reilly, as soon as the lessening sound of footsteps indicated that this question might safely be asked.

"Why? Don't you know him?" asked the Sales Manager. "He has been with the Link company, but wants to get outside. We needed a man, and I thought he could do the work."

"Did you try to find out whether he was capable before you hired him? Did you ask him any questions about the trade, or did you just take his word for it?"

"He's all right," defended the Sales Manager. "He's been pretty busy closing up over there and probably skipped a few issues of the trade papers."

"Skipped a few is good!" ejaculated the little dealer. "I'll bet I can pick out any paper in the stack and stick him on something on the first page of any one of them."

"Well, what if you can?" was the Sales Manager's challenge, as he flipped the last letter into the mail basket, leaned back in his chair and, with his pipe in hand, began to mine tobacco with one finger from the bottom of a tin box.

Reilly Criticizes Unposted Tradesmen.

"I don't know that it would get me anything if I did stick him," replied Reilly, "but I guess it would give you some insight into his interest in the trade. So many alleged salesmen and managers drift into my place who don't know what's going on in their own business that I get irritated when I try to talk to them. I've often wondered how some of them hold their jobs. Several years ago a man who had made his pile and who had retired told me that before he

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hired men he always asked a few questions to discover what trade papers they read and how well posted they were concerning their business. He said it was an unfailing measure of their interest and enthusiasm, and I believe it. If two men are after any job I ever may have to fill, I'll give it to the man who proves that his interest in the business is real and not limited to the catalog or salary-grabbing sort. And how can a man learn more about his trade than by reading his trade papers?"

"Pretty Good" and "Real Good" Types.

"That's all right," agreed the Sales Manager. "I read them; but lots of pretty good men don't."

"You've sounded the right note there," retorted Reilly. "'Pretty good' just about



"BUT I DO SAY THAT ANY MAN'S A BETTER MAN IF HE KEEPS POSTED"

classifies that type. That's why they are only 'pretty good' and never get to be 'real good.' Don't you know that this 'pretty good' man is kicking away the ladder on which he could mount to a higher level? Don't you know that he can't be of full value to himself or to his employer, unless he follows the doings and opinions and suggestions of the trade? And don't you know that the only way such knowledge can be obtained to-day is through the trade papers? Here is Lawall, getting I don't know how much a year and hoping to get more some day, while all the time he is overlooking his one best bet. He thinks he's too busy; they all say that.

Examining the "Too Busy" Excuse.

"How some men get time to eat or sleep is a mystery to me. I'll bet that Lawall, if you asked him why he doesn't read the trade papers, will trot out a string of good excuses a mile long and the burden of every one will be 'too busy.' He doesn't stop to think that reading them is as much his duty as are half of the other things he does in the course of a day. He can't even offer the excuse that he doesn't want to pay for them, for they are practically thrust under his nose by his employers, and every good dealer he runs across in his territory has one. One evening a week, that he probaby spends reading fiction or playing pinochle, would give him a wealth of trade information—even one hour would help him; but this 'busy man' puts fiction above business.

"It certainly gets me going to see the attitude some men take. They are like some students in a lecture course in school; they can get past with a minimum effort and attention to what is going on and believe they are getting along as well as the man who studies. Some day, however, they will be called upon to wonder why the other man, with whom they traveled side by side, suddenly forged ahead. The reason is that he was onto his job and took advantage of the opportunities offered. With the man who keeps informed on his trade or profession, opportunity doesn't have to kick at the door.

"I don't mean that a man should take every trade paper and read every line in it; that's too much, and some of them aren't worth reading. They're nothing but a bush that some enterprising chap plants on which to raise a crop of advertising. The good ones are worth looking over, and even if a man doesn't have time to read everything in every one of them, he can gather the gist of what they contain and read the parts he should read at any sacrifice.

"Take that Leonard transmission patent story: it's a sure thing you've got an engineer who reads the trade papers. And I'll bet you one large 'highball' that he will get along; I don't even know who he is, either. Lawall ought to know as much about such things as any engineer should know. The moment he ran through the paper, you noticed it gave him an idea or reminded him of something he ought to do or might do. Doesn't that prove something?

Interest That Lies in Trade Papers.

"I have a lot of old friends in the trade and I keep pretty good track of them through the trade papers. You'll be surprised how well acquainted you'll get with people you never knew before and never saw. New dealers that I know or know of bob up right along, and quite often I read where one of my old-time friends has been pushed off the boards. The big patent litigation suits are interesting, and some of them will surprise you. This Leonard story gave me a jolt. I always supposed anybody that wanted to could build a four-speed transmission, but it seems that some of them are in for a little trouble before it is settled. There's this about it, too: when you find a trade paper that contains the stories of other men, as to how they conduct their business, read these stories; the interchange of ideas is valuable. Your own idea generator will develop amazingly. I am not yelling for any particular paper or urging a man to subscribe for a bunch of them, but I do say, and say it out loud, that any man's a better manager, or salesman, or dealer for the reading of any of the good ones.

Made Employe Study Trade News.

"Oh, I mean it, Jim," interjected Reilly, as the Sales Manager looked at him quizzically. "I haven't a damned bit of patience with the fellows who set up the 'I haven't time' cry. They are—well, never mind. They are not truly interested or enthusiastic about their business, anyway. That goes! I don't care how good they are or how much money they draw."

"But what would you have me do—set Lawall down at a desk and tell him to read trade papers for an hour?" interrupted the Sales Manager.

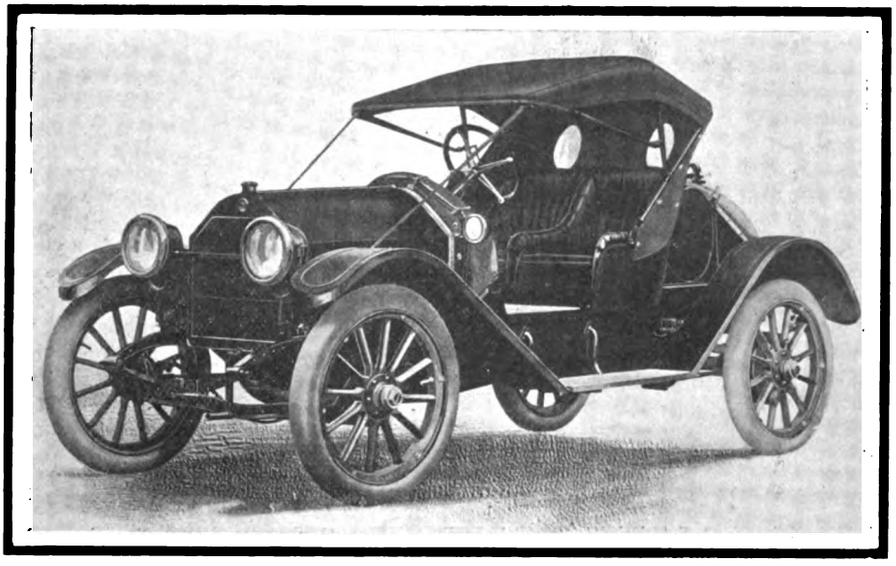
"I don't know what you'd do," was Reilly's final statement, "but I'll tell you what I do. When my salesman first came to work for me I used to tell him the trade papers were his catechism and told him reading them was a part of his job. I used to ask him questions, too, just to see if he was studying his catechism. It wasn't long before I had a pupil that studied for the love of it."

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INCREASE OF EQUIPMENT CHIEF CHANGE IN MARION

Same Chassis and Same Three Models Constitute the Line—Marion Cars Now in Their Tenth Year.

For the coming season the products of the Marion Motor Car Co. of Indianapolis, Ind., will consist of three body styles mounted on two chassis which are powered with four-cylinder motors rated at 40 and 48 horsepower, respectively. As heretofore, the three models are a moderate priced, medium sized touring car and the roadster which at the time of its introduction last year was styled the Bobcat, both being mounted on the smaller chassis, and a large touring car, which is mounted on the 48-horsepower chassis.



MARION "BOBCAT" ROADSTER WHICH SELLS FOR $1,425

In common with so many other manufacturers whose products have proven eminently successful over a long term of years—Marion cars are in their tenth year—the Marion company has found little reason for altering designs to any great extent and, instead, has contented itself with materially increasing equipment, which, in latter day automobile language, may be taken to mean the addition of electric lights and engine starters, and making a few more or less minor changes calculated to increase smoothness of operation and render easier the action of the cars in general.

Thus, for instance, body lines have been slightly altered in order to produce a more harmonious exterior appearance, which has been enhanced in no small way by the addition of a deep cowl over the dash; the tool boxes have been taken off the running board and placed in a less conspicuous position; the chassis has been lowered 1¼ inches, permitting easier entrance to the tonneau and increasing stability; new English steel springs have been substituted for the older style, thereby increasing the easy riding qualities of the cars; the brake cams have been enlarged to increase the efficiency of the brakes; the wood trimmings now are mahogany; and the steering wheel is fluted, of the positive grip type, with friction instead of ratchet controlled spark advance and throttle levers. Briefly, these are the only changes which have been made in the three models.

Except for a slight difference in size commensurate with the difference in power, the two touring car models are quite similar in appearance. Model 37A, which is a five-passenger car mounted on the 40-horsepower chassis, is a straight-line creation in which the lines are unmarred by unsightly projections; door handles and latches are inside and the spare tires, carried on demountable rims, are relegated to a position of comparative obscurity at the back of the tonneau. The finish is in Brewster green with nickel plated trimmings. Model 48A, as its designation serves to indicate, is the 48-horsepower touring car. Like the other, it accommodates five passengers quite easily, with plenty of elbow and knee room. Its lines are almost exactly the same is the lines of the smaller car. The Bobcat roadster is designated model 36A and has been designed to fill the demand for a speedy two-passenger car with the maximum of comfort consistent with lightness, substantial construction and speed. It is geared slightly higher than the model 37A touring car, though otherwise exactly like it in chassis details, and is capable of a speed of more than a mile a minute. Like the others, its trimmings are in nickel plate.

All three models are listed completely equipped, the smaller touring car at $1,475, the larger one at $1,850 and the Bobcat roadster at $1,425. In addition to the usual complement of top with envelope and side curtains, ventilating windshield, Warner speedometer, demountable rims, foot rail, robe rail, tire irons, tools and tire repair kit, pump and jack, the larger touring car is equipped with a complete dynamo electric lighting and engine starting system and an electric horn. The equipment of the other two models is the same, except that the electric horn is missing and the place of the electric starter is taken by a Disco acetylene starter. All models are equipped with storage batteries, the capacity of the battery supplied with model 48 being 120 ampere hours and the capacity of the batteries supplied with the other models being 80 ampere hours. The two smaller models carry Prest-O-Lite tanks, as well. In the larger model the electric starter drives the gasolene engine through flywheel gearing and a positive quick-acting clutching mechanism, the operation of starting being controlled from the driver's seat.

The motors in the two chassis are identical, except for a difference in bore and stroke. As a matter of fact, the chassis themselves are very nearly identical, the only difference being in the size of parts. In both motors, the cylinders are cast in pairs, with the valves all on the same side and carefully enclosed by means of light, removable metal covers. The bore and stroke of the smaller engine is 4 x 5 inches and of the larger one 4⅛ x 5¼ inches, from which it may be appreciated that both belong properly in the long-stroke class.

In working out the carburation scheme, cognizance has been taken of the desirability of supplying a slightly heated mixture, and to this end the valve ports have been cast with liberal heating pockets. The carburetter is attached at the opposite side to the valves with the intake manifold passing between the cylinders. Consequently, some of the heat from the cylinders is absorbed and goes to warm the gas in this way. Dual ignition is provided by magneto and batteries with a combined switch and barrel transformer coil mounted on the dash.

The lubrication system is of the constant level pump-over splash type, in which the oil is maintained in constant circulation and therefore can be used for considerable periods without replenishment or attention. Circulation is effected by a gear pump, the oil being pumped into troughs beneath the connecting rod big end bearings, whence it is splashed over the cylinder walls and auxiliary bearings. Cooling is effected by

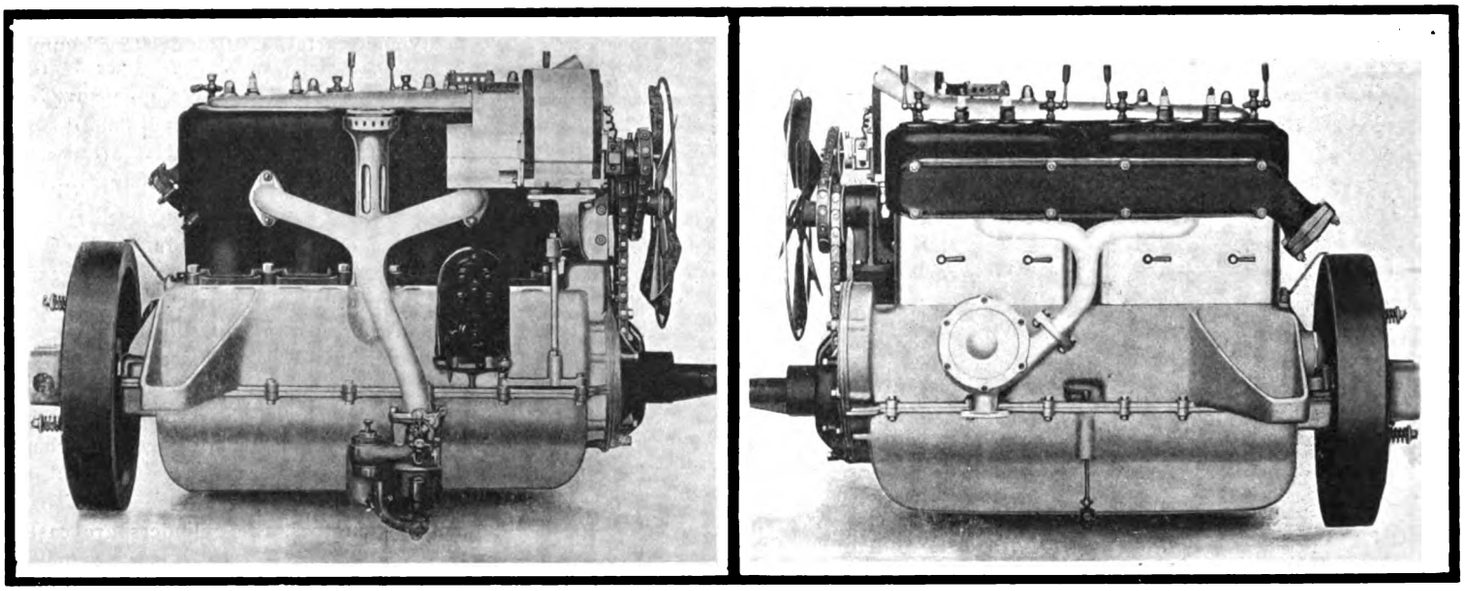
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means of a centrifugal pump, liberal water jackets and a cellular honeycomb type radiator.

Both motors are supported on the chassis at three points and incorporate the clutch, which is of the leather faced cone type with spring inserts to ensure smooth action, in a singel unit. All of the transmission elements are combined in another unit which is firmly bolted to the rear axle. Change gearsets provide three speeds forward and reverse, selectively obtained by means of the usual hand lever placed in the center of the footboard. In the larger touring model, the rear axle is of the full-floating type; in the smaller models it is of the semi-floating type.

Throughout the construction of all the models, extensive use is made of ball and roller bearings, very nearly every rotating shaft being monuted in either one or the other style of anti-friction bearing. The fan, for instance, is carried in ball bearings; in the clutch there is one annular thrust ball bearing and one plain bronze bearing; the gearsets are mounted in four New Departure double row annular ball bearings; in the 36A and 37A rear axles there are Hyatt roller bearings in the wheels and Timken roller bearings in the differential ends of the driving shafts. In the model 48A, Timken bearings are used in the wheels as well as in the shafts; the front wheels of the two smaller models run on ball bearings and those of the larger touring car are mounted on Timken rollers.

The springs in each case are semi-elliptic in rear, the wheelbases of the three models being 120 inches for the 48A and 112 inches for the 37A and the roadster. Brakes, of which each car is fitted with two sets, all are of the internal expanding variety and operate on drums 14 inches in diameter and 1¼ inches in width. The larger touring car is mounted on 36 x 4 inch tires and the two smaller ones are shod with 34 x 4 inch tires, demountable rims being standard equipment with all.



INTAKE AND EXHAUST SIDES OF MARION MOTOR SHOWING GENERATOR AND MAGNETO POSITIONS

"Heating Plug" that Assists Starting.

The application of heat to a cold motor in order to facilitate starting usually is a disagreeable process; under some circumstances it cannot be done. There is no question as to its efficacy, however, and advantage has been taken of the principle involved—that of giving the mixture sufficient heat so that it will not condense in the cylinders—in the construction of the Stalit heating plug, which just has been placed on the market by George Staats & Co., of 252 Lorimer street, Brooklyn, N. Y.

The Stalit heating plug is much like an ordinary spark plug in appearance, except that the insulating core is extended for a considerable length. In this extension is contained a heating unit which becomes hot when a suitable current of electricity is passed through it. The plug is screwed into the intake manifold, preferably an inch or two above the carburetter, and wired to the ignition or any other battery that may be on the car. By switching on the current for half a minute or a mniute before starting up, according to the chilliness of the engine, the pipe and the air in it are well warmed and a real, live, readily ignited mixture is sent to the cylinder when the crank is turned. The plugs are regularly made for 6-volt circuits.

Melted Lead for Tempering Tools.

A simple method of heating small tools and irregularly shaped articles for hardening is to immerse them in molten lead. Before they are placed in the lead, however, they should be pre-heated to approximately 800 degrees and should not be permitted to remain in the lead an instant longer than is absolutely necessary to bring them to the proper temperature.

Fine Abrasive for Contact Points.

Cuttlefish paper, which is a product similar to sandpaper save that the grain is very much finer than the finest grained sand paper, is very efficient for use in cleaning contact points of ignition apparatus, or the surface of a commutator on a starting motor or lighting dynamo. While the material is not regularly carried in stock by hardware dealers, it always can be obtained at dental supply stores.

When Small Pieces Get into Crankcase.

In case of the failure of a connecting rod bearing, or of any other trouble which is apt to result in the dropping of small particles of metal into the bottom of the crankcase, there is a possibility of the small pieces getting into the oil pump, if one is used, and interfering with the action of the check valves. The screens necessarily are of rather coarse mesh and good-sized particles can pass through. Draining out the oil and washing the case is advisable.

Gasolene for Detection of Leaks.

Owing to the peculiar facility with which gasolene will pass through openings that seem too restricted for heavier liquids, it is extremely usetul for testing for leakage. A crack that is quite impervious to water will pass gasolene, and a valve which will not leak the insidious fluid will hold compression well.

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DRESSING THE WINDOWS TO SUIT THE SEASONS

How the Time, the Place and the Goods May Be Made to Attract the Man and the Money and Quicken the Market—Keeping the Window Display Ahead of the Times by Enlisting Services of the Weather Bureau.

It is an axiom of the business of selling that if the right thing is presented to the right man at the right time a sale is practically assured, without the exercise of any of the arts that enable a salesman to do business under less favorable conditions. Given this much-to-be-desired triumvirate of fortunate circumstances, and it is more than likely that the "right man" will go out of his way to buy. And one of the inferences that may be drawn from these premises is that if the right man happens to see the right thing attractively displayed in a show window or properly exploited in an advertisement at the right time, there is a strong probability that he will walk right in and buy it.

The Problem of Window Display.

The problem of the man behind the window is to pick out the right things and put them in his window at the right time. The third condition must be left to chance; but there are so many "chances" in a busy street that it is well worth while to make sure that the goods and the time are right. In other words, the window display should be suited to the season, being made up of the things most likely to appeal to a man at the time.

There is considerable evidence to prove that this matter is not given due consideration in all cases. For instance, a set of fur robes forming the most conspicuous feature of a window display on a broiling August day hardly is calculated to start a man's hand in the direction of the pocket where he keeps his money; yet it has not been necessary to stray from New York's Broadway to see such things.

Profiting by Daily Weather Changes.

Keeping glaringly unseasonable goods out of the window is not all that is necessary, by any means. As a matter of fact, the dealers in automobile accessories and supplies might very well cast observing eyes on the window display methods of the dry-goods people, for instance. Not only are unseasonable displays of such commodities practically unheard of, but they frequently keep pace, to some extent, at least, with the variations of the weather; when the rains descend, umbrellas and garments that are waterproof—more or less—are in evidence, only to be whisked out of sight when the sun shines. A tour of inspection of a dozen representative automobile accessory and supply stores, on the other hand, will reveal that most of them have their windows filled with goods that cannot exactly be called unseasonable, because they are for the most part such as are of use all the year round, but there is an absence of any distinct recognition of the current season. Also the windows are overcrowded and the variety of goods so great that nothing "stands out."

With the approach or arrival of winter there are many things that can very well be featured in window dressing, and it is a pretty safe assertion that many an old customer will be induced to enter and buy because he sees something in a window and remembers that he needs it just at this season, whereas he would pass by with an unjogged memory if he saw merely the conventional conglomeration of tools, lamps, goggles, spark plugs and cans of oil.

An Effective Instance Illustrated.

The frequent changing of a window dressing of course entails thought and labor; but window space and frontage cost money—a substantial proportion of the rent—and ought to be made to pay for themselves. There are many "pegs" upon which frequent changes could be hung, so to speak, and which would not only call attention to the momentary display, but would get people into the habit of looking into that particular window. For instance, a big, plain placard, in the center of the window space, might be inscribed as follows:

THE WEATHER.

For New York and vicinity, colder, with rain followed by snow or sleet. Sunday, fair and cold.

Looking at such a sign, one is inevitably caused to think of slippery, skiddy streets, driving sleet, chilled hands and feet and a whole train of equally disagreeable conditions. And surrounding the sign, there is an assortment of goods calculated to catch the eye, the thought and the business of one who may need anti-skid tires, covers or chains, warmly lined waterproof clothing, windshields, side curtains and other things designed to keep out the prognosticated inclemency and guard the car from its effects. The exercise of a little ingenuity will permit separate displays of each of these articles, and usually more striking effects can be obtained by such displays than by conglomerate exhibits. There also are such comforts as foot warmers, lap robes and foot robes. And as when one is chilled from a long ride in the cold there is nothing more conducive to comfort than a hot drink—whether soft or hard—the suggestion of vacuum bottles is inevitable.

What to do When Weather Fails.

As the daily weather prophecies are changed in the window the display can be changed to suit, and if the conditions are such as to give an opportunity to display goods especially suited to the weather expected, so much the better. If there is nothing in the weather that suggests anything in particular, there always are the standard general winter goods, and by daily exchanges of the combination the window can be kept interesting and free from monotony. The feature of this particular scheme is that it not only keeps pace with the weather but keeps a little ahead of it and offers buyers a chance to prepare.

Cold snaps very appropriately can be prepared for by investing in anti-freezing solutions, radiator protectors — either the kind that prevent over-cooling when running or those which retain heat and prevent freezing when standing—lighter oils and greases for the engine and the gearcase, devices for keeping the hands warm when steering, caps, mufflers, ear-laps, gauntlets, wind deflectors and the like. All of these things should be advertised or displayed, or, better still, both.

Cold Weather Motor Accessories.

There is another group of accessories that may be featured when the weather man hangs out the signal for arctic weather conditions. Carburation is apt to become unsatisfactory when the thermometer is reaching for the zero mark, and this gives an excellent opening for the introduction of carburetter warming devices, hot air intakes, auxiliary air valves with hot air supply, etc.

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And the difficulty of starting a thoroughly chilled motor will be suggested by priming cocks, priming spark plugs, priming squirt-cans, very light gasolene for priming and ether mixtures, all intended for the same purpose.

The dealer ought to make use of the knowledge he possesses—or should possess—of practical automobile operating, and make window suggestions accordingly. For example, he knows that the lubricating systems in some cars will not feed cold and consequently abnormally heavy oil as freely as if the oil was at normal temperature. Therefore there is a chance of starving the engine before the body of oil becomes warm and comparatively thin. Suitable placards used as reminders may be of benefit to both parties concerned, and may even be of some little educational value by calling owners' attention to matters to which they had given no consideration, through ignorance. There are numerous opportunities for condensed dissertations on anti-freezing solutions, various ways of keeping warm, good hot drinks to carry in vacuum bottles, and other matters of more or less general interest, to say nothing of occasional hints pertaining to particular types or makes of cars.

Garage that Covers Acre and a Half.

Whether it is the largest of its kind would be difficult of determination, but the garage which is being erected on East 13th street, near Euclid avenue, in Cleveland, O., by the Wigmore Co. is claimed to be the largest, and undoubtedly ranks with the largest, having an acre and a half of floor space, which is spread over one tract of land. The building has a frontage of 242 feet on East 13th street and is 260 feet deep, computation showing a total of 62,920 square feet of floor. It has three times as much floor space as the Central armory in that city, and the usefulness of a structure of such size to the owners and the trade in general is indicated by the fact that the Cleveland automobile show will be staged in this building, opening January 4. This, also, will mark the opening of the garage. The structure will cost approximately $200,000

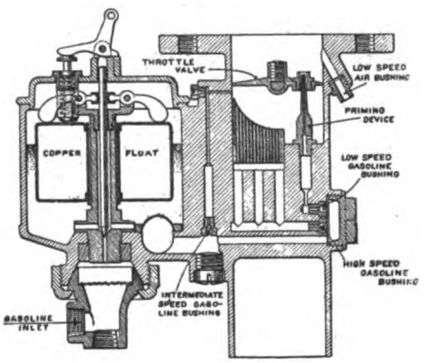
Square Files for Heavy Service.

For very heavy filing, where much metal has to be removed, there is nothing more effective than a large, coarse-cut square file. The somewhat narrow cutting surfaces go right into the metal and cut it out rapidly. A very heavy man, who can put a great deal of weight on a file without excessive exertion, can perhaps do greater execution with a flat file, but for a man of average weight there is nothing better than the square tool.

SIXTEEN SPRAY NOZZLES IN MAXI CARBURETTER

Jets Are Arranged to be Opened Successively as Throttle Opens—Insures Proper Mixtures for All Speeds.

If the multiple jet principle, upon which not a few carburetters giving efficient service operate, is the correct principle for the production of a mixture of constant proportions of carburetted gasolene and air at all of the different engine speeds, it appears reasonable that the greater the number of jets, always provided that they are correctly proportioned and designed to open or to be opened at the proper time, the more constant will be the resulting mixture. It was by adherence to this logic that Arthur J. Weiss, of West Orange, N. J., was enabled



MAXI CARBURETTER IN SECTION

to hit upon the principle which is embraced in the Maxi carburetter, which is now being made at 216-228 High street, Newark, N. J., the factory of the Maxi Co., which expects to have carburetters ready for the market by the end of the present month.

The design of the Maxi instrument, as shown in the accompanying sketch, embraces the use of a float chamber separate from the mixing chamber, and provided with the orthodox copper float and lever-operated needle check valve, the combined action of which parts insures constant fuel level. The air passage is a simple, straight passage which is obstructed only by the metallic cross member which contains all save one of the 16 jets which come into play according to the prevailing conditions under which the motor is operating, and the extent of the opening of the throttle.

When the throttle is fully closed, but a single jet, known as the priming jet, and which is made so long as to be enabled to project through a small opening in the butterfly valve, is in communication with the inlet manifold and with the motor cylinders As the valve closes quite tightly, with a consequent minimum of leakage around it, a separate air passage for low speed operation leads at an angle through the wall of the mixing chamber above the throttle. As the throttle is opened, the butterfly itself uncovers first the intermediate speed jet which leads through the mixing chamber wall, and then in succession the 14 remaining jets which are carried on the cross member, the upper contour of which is concave so that the butterfly valve follows the arc as it is opened.

Adjustments, after the apparatus has been installed, and working parts other than the float mechanism and the throttle absolutely are done away with by virtue of the construction. When the carburetter first is attached, trials are necessary to secure bushings of the proper bore for insertion in the ducts which lead to both the high speed and the low speed jets and the low speed air passage whereby the proper amount of fuel is passed for the functioning of the motor; the bushing for the intermediate speed duct is adjusted at the factory, and needs no attention.

Rosin to Prevent Slipping Brakes.

The friction producing qualities of rosin are useful in emergencies, but whether it is a slipping clutch, brakes that refuse to hold or a slipping belt in the shop, rosin should not be used if it can be avoided, for after a short time the slipping becomes as bad as ever and the surfaces are filled with the stuff, which is to some extent injurious to leather and always is difficult to get off. For leather clutches or leather belts, the only really good cure for slipping is to have things properly tightened and the leather surface in good condition, and perhaps treated with a little good belt dressing or castor oil. A clean and properly adjusted brake certainly needs no rosin to make it hold.

Screw Driver for Heavy Work.

An extremely useful tool for removing large machine screws is a screw driver of heavy construction with a square shank to which a wrench can be applied to give extra leverage. In using such a tool it is necessary to be rather cautious, for unless the screw is a big, heavy one the head is rather easily broken, and drilling probably will be necessary in order to get the screw out.

Skins that Must be Taken off Tools.

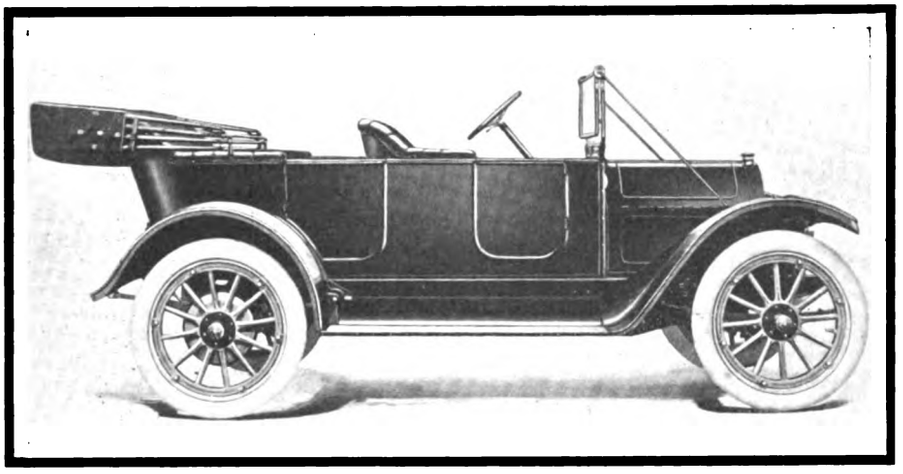
The outer skin or scale which forms when tool steel is annealed prior to hardening always should be removed before the operation is completed. Otherwise the outside will be comparatively soft. A safe rule is to remove at least five per cent. of the thickness of the bar.

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REO'S DESIGNER DECIDES TO LET WELL ENOUGH ALONE

No New Features and Little Change in Old Ones—More Steel, More Rubber and More Rollers the Whole Story.

When the Reo Motor Car Co., of Lansing, Mich., brought out its last car, styling it Reo the fifth, the claim was made that the car was as good as its designer and builders knew how to produce and that material changes of any kind were not likely to be made. That the manufacturers have discovered no good reason for not adhering to this opinion is plainly indicated by the fact that the latest Reos are identical with the first of their type in all material respects.



REO "THE FIFTH" IN FIVE-PASSENGER TOURING CAR FORM

The number of drop forgings used in the construction of the chassis has been increased from 160 to 190—that is to say, 30 of the component parts that formerly were made of other materials now are of drop forged steel, with a resultant increase in strength for weight. Roller bearings have been substituted for some of the plain bearings formerly used; the increase simply tends to still further increase efficiency and smooth running. The lighting plant of all models now includes three electric lights—two side lights and a tail light—with a storage battery to supply the current, and two gas headlights with gas tank.

Four-inch tires have been substituted for the 3½-inch tires with which the wheels of the preceding series were shod. This increase in the carrying capacity of the tires has a marked ecect on the tire mileage and consequently the tire expense is decreased—to say nothing of the fact that the comfort of the passengers is materially enhanced.

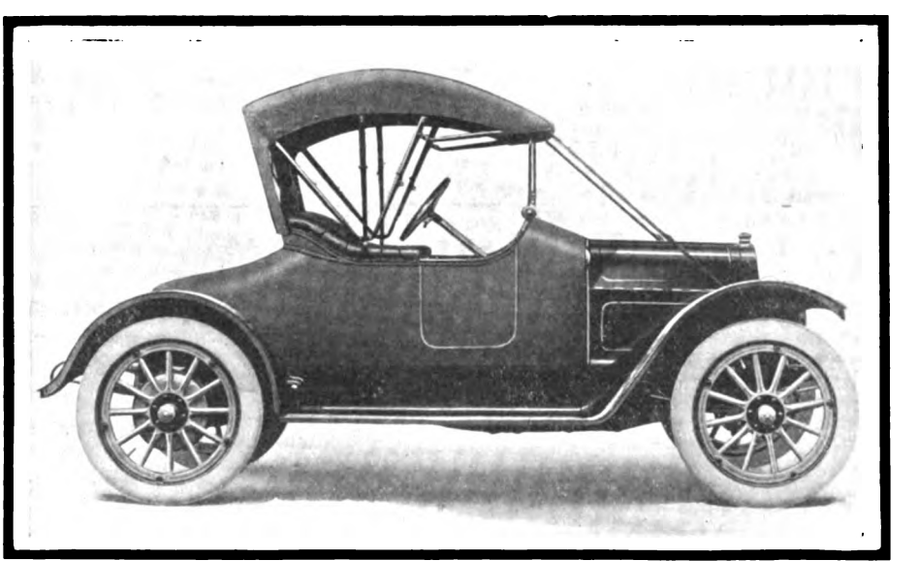
Add a slight enlargement in body dimensions, and the list of improvements is complete, except for those little touches that constantly are being added—an improved fastening here and a larger bolt there and a stronger bracket or brace somewhere else.

Three Reo models are built, the line consisting of a two-passenger roadster, a five-passenger touring car and a six-passenger limousine. All are mounted on exactly the same chassis, which is practically indistinguishable from earlier Reo the fifth chassis. The motor, which is rated at 30-35 horsepower, has four cylinders cast in pairs with a bore of 4 inches and a 4½-inch stroke; the valves, which are of liberal size, are in the cylinder heads and the exhaust valve, which because of its exposure to the exhaust gases, is brought to a very high temperature when the motor is running, is in the path of the cooling water as it enters the jackets on returning from the radiator. One of the features of the Reo engine is its accessibility, and an example of this is found in the fact that the main bearings of the crankshaft, which is of the three-bearing type, are adjustable from the exterior, without taking down the crankcase; it is claimed that these bearings can be adjusted in the short time of 30 minutes. The connecting rods are adjustable through hand-holes in the crankcase. Lubrication is by a force-feed return system.

The cooling system of the Reo includes a large centrifugal pump, which ensures an active circulation of the water, and a tubular radiator with cooling flanges so disposed as to give the appearance of a cellular radiator. In order that the carburetter may be efficient and reliable in operation, even with the low grades of gasolene that now are commonly supplied, it is heated both by hot air and hot water. Ignition current is supplied by a low-tension magneto, with a battery as an auxiliary source of electrical energy.

The first link in the mechanical chain which transmits the power of the engine to the rear wheels is a multiple disc clutch, a feature of which is a positive release which prevents dragging of the discs upon each other when the clutch pedal is in the release position. The change-speed gearset of the selective type provides for three forward speeds and the conventional reverse, all controlled by a single cane-handled lever mounted centrally and swinging on the top of the gearcase; the lever has a very short swing in four directions, and gear changes are effected with great ease. The rear axle is of the semi-floating variety; the wheels are mounted on high-duty roller bearings.

The chassis frame is of the usual pressed steel construction, amply heavy to possess the stiffness necessary to withstand stresses without sagging. The frame is carried on semi-elliptic front and three-quarter elliptic rear springs two inches wide; the rear



REO 30-35 HORSEPOWER ROADSTER WHICH LISTS AT $1,095

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springs are 46 inches long and the front springs 38 inches, and all have seven leaves. Particular care has been exercised in the making of these springs, the steel of which they are forged is from the centers of the ingots, the ends, which are liable to contain imperfections, being discarded.

Both sets of brakes are operated by pedals and in both the leverage is such that the application does not require much strength. The brakes hold equally well forward or backward. Connection between the brake pedals and the brakes is through steel cables, the object being the elimination of rods, with their possibilities in the way of rattling. The elimination of the usual emergency brake lever results in a very clean-looking footboard, there being only the gearshift lever in addition to the pedals.

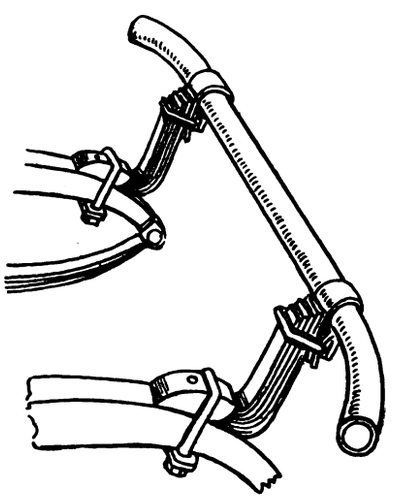
Front and rear wheels are of the same diameter, 34 inches, with 4-inch tires, and all run on roller bearings. The front axle is of I-beam cross-section and is of an alloy steel of which the Reo company is especially proud—and with reason, for the statement is made that of all the Reo the fifth cars that have been turned out not a single case of a broken axle has been reported. The wheelbase is 112 inches.

The steering wheel is placed on the left side of the car and, with the centrally-placed gearshift lever and the pedal control of both brakes, forms a system that has found no small degree of favor. The finish of the body-work has been improved by the addition of no less than five coats of paint.

The regular equipment of all models includes the electric lighting system already referred to, as well as gas headlights, gas tank and the usual tools, jack, and so on. With standard equipment, the touring car and the roadster list at the same price, $1,095, and the limousine at $1,600. For an extra consideration of $100 the open models are fitted with mohair top with side curtains, windshield, ventilator, speedometer and gas motor starter. A starter is installed in the limousine for an extra $10.

Leaf Springs in Hartford's Bumper.

Indicative of the steadily growing demand for a simple and easily attached device for protecting the radiator and lamps as well as the remaining "forward works" of the car from injury, the Hartford Suspension Co., of Jersey City, N. J., which heretofore has confined its operations to the production of Truffault-Hartford shock absorbers, Hartford jacks and the Hartford electric lighting and starting system, has entered the "bumper" field with a device which, it is asserted, is as effective as it is simple.



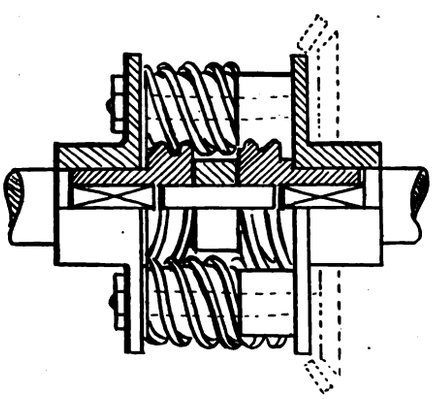
HARTFORD SPRING BUMPER

In its simplest aspect, the device consists of a pair of built-up springs of right angular form, which are provided at one end with clamps which serve for attachment to the side members of the car frame. The latter is accomplished without the necessity of drilling holes or using tools other than a common monkey wrench for turning the nuts on the "U" bolts which serve to keep the device in place and, once tightened, the clamps are prevented from working loose and rattling by virtue of nut locking devices which are provided.

Naturally, the flexibility of the spring serves to deaden the shock when the bumper is brought into action, but undue spring play is obviated by the rubbing friction of the spring leaves upon each other, which can be made greater or less, as need be, by tightening or loosening the clamp bolts.

Here's the Worm Gear Differential.

Although the use of the worm gear in place of the orthodox bevel gear as a final drive for motor vehicles no longer attracts more than passing notice, the use of the device in the formation of the differential gear is sufficiently radical to make one "sit up and take notice," so to speak. Of British origin, the worm driven differential is patterned after its time-honored prototype, the spur gear differential. As shown in the accompanying sketch, the orthodox main drive pinions and the planetary spur gears which transmit the power from the large bevel gear all are present but in helical gear form. The operation of the device is said to be rendered more smooth and the wear reduced by the use of helical gears.



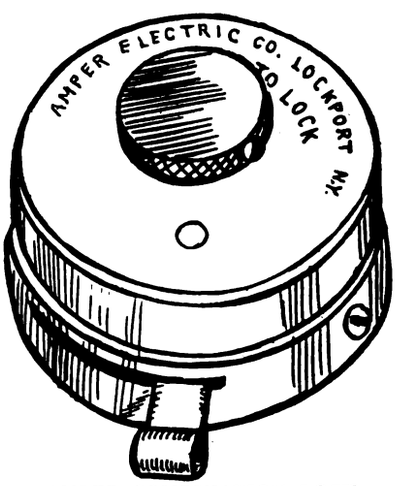
WORM GEAR DIFFERENTIAL

Sand Blast for Cleaning Files.

Files that are somewhat worn and clogged up with dirt may be given a temporary biting ability by sand-blasting, which cleans out the teeth and to some extent sharpens them up.

Combination Lock Workable in Dark.

Interrupting the ignition circuit so that the motor cannot get the vital spark long has been a favorite method of rendering the car an inert thing and so preventing its use by those whose consciences and whose right to the machine are equally inconsequential.



AMPER COMBINATION LOCK

One of the newest of these spark-interrupting devices is the Amper Auto lock, which is shown in the accompanying illustration, the product of the Amper Electric Co., of Lockport, N. Y. In its construction particular consideration has been bestowed upon the thieving fraternity, so to speak, by incorporating in the switch lock a combination device which, like the combination of a safe, requires no key, being operated by a milled knob. By means of audible clicks it is a simple matter to work the combination in the dark. There is no key or plug to lose or to fumble for with heavy gloves on. The switch can be locked in either the "off" or the "on" position.

When the combination is locked the cover of the switch is locked on, and the screws which secure the device to the dashboard are covered and inaccessible. The combination can be changed at will.

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TRUTH-TELLING AND WHAT IT MAY ACCOMPLISH

Garageman-Dealer in New Jersey Town Has Won Profitable Trade Through Inherent Principles—Methods He Employs, Results He Has Obtained and a Few Illustrative Incidents.

Just how many garagemen there are who are liars there probably is no way to determine; the certainty is that their number is large enough to be a detriment to the trade, but there is evidence of a more or less general awakening that promises better things. The garageman who does not tell the truth and otherwise play fair with his patrons gradually will become a diminishing factor.

The hurly-burly of early automobile days, when prices and conditions were greatly unsettled, developed the "highway robber" type of garageman, and as a result the honest class realizes that it will be some time before the stigma can be entirely removed from the business. It, however, is becoming much more frequent than it formerly was, for an automobile owner to be agreeably surprised by finding himself treated like a man and by a man in a garage.

Uplift of Trade Jacobus's Object.

One who is working hard for the uplift of the trade is C. E. Jacobus, who is about all there is to the Montclair Garage & Machine Co., of Montclair, N. J. He used to be an insurance salesman and, having the principles of true salesmanship at heart, he is making money in his establishment, combining garage work with the sale of cars.

Although Jacobus in telling a Motor World man of the business did not lay emphasis upon the fact, it was evident within a few minutes that truth telling was a fundamental principle with him; he appeared to have been telling the truth for so long that it has become a fixed habit.

As Jacobus and the Motor World man stood in the former's office talking and at the same time watching the cars pass—for it is a busy avenue of travel—a heavyweight motorist appeared at the door, dressed in a warm overcoat, for it was a chilly day for touring, even if the sun was bright.

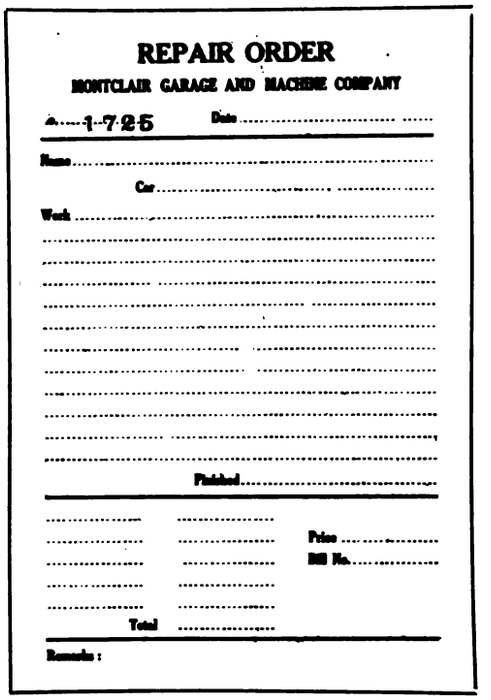
"Jacobus," he said, "I'd like to have my car fixed; one spring is broken. Can I get it this afternoon?"

"I can fix it," answered the garageman, "but I won't say I'll give it to you this afternoon."

"But I want it badly. Can't I have it by five o'clock?"

"I don't know," declared Jacobus. "I don't want to say I'll give it to you and then have to disappoint you. I'll tell you what we'll do; come into the repair shop and we'll see if we can find a man to do it; they're all pretty busy."

The two went to the shop and soon returned, the owner happy. A workman had been found who would finish the job in hand within an hour, which would give him ample time to repair the spring before five o'clock.


REPAIR ORDER

MONTCLAIR GARAGE AND MACHINE COMPANY

No. 1725 Date .....

Name .....

Car .....

Work .....

Finished .....

Price .....

Bill No. .....

Total .....

Remarks:

CARD THAT ACCOMPANIES CAR

But before Jacobus made sure he could turn the work out in that length of time, the owner had appeared persistent in his attempt to get a promise for five o'clock. Apparently he knew the truth-telling principles of the establishment and seemed satisfield that if he could extract the promise he could get the car when he wanted it.

Where Veracity Satisfied a Customer.

This man was hardly out of the place when an employe rushed into the office. "Mrs. ——— says she is sure she had an inner tube in her car, and it's gone," he blurted. "She thinks someone in the garage stole it. What'll I do?"

"Oh," and Jacobus smiled, "I stole it. I had to have one the other night and could not find the right kind, so I remembered she had one in her car, and I took it out." He reached to the shelves on which tubes were stored and, taking down one, said, "Here give her this one."

"What'll I tell her—that someone made a mistake?

"No," admonished the garageman, "tell her I took it. Tell her just how it happened. I took it and forgot to put it back. What's the use of telling her something that isn't so. The truth is better than any excuse you can think of."

The employe took the tube and departed. He explained how it had been taken from the lady's car and she was satisfied.

"I know we garagemen have a bad name," remarked Jacobus, "and sometimes I've been tempted to quit the business, but I'm getting aong fairly well now, and as long as I remain here the business will be honestly conducted. What's the use of telling a customer something that isn't so? It does no good whatever. The customer is dissatisfied and you hurt your business, whereas the customer would rather have a poor promise kept than a good one broken."

Flag on Roof Brings Much Business.

The experience of the Motor World man is illustrative of how many motorists are led to this Montclair establishment. He had a general idea as to where Jacobus's place was located, but after leaving the end of the railroad which terminates at Montclair he had walked several blocks in search of the garage and was about convinced that he was on the wrong street, when far ahead, high in the air, as effective as an electric sign at night, was seen a flag fluttering in the breeze. It was yellow and black, and in plain and loftv letters was the word "Garage." "Montclair Garage & Machine Co." would have taken too much room, and the letters would have been too small; the proprietor's instinct had told him that the one big word, readable a half mile away, was sufficient. The flag can be seen far in either direction, and more than one traveler on this east and west highway across New Jersey has left money at the garage, having been drawn there by the yellow flag. In fact, the Motor World man, on his way back, discovered that he had passed and hardly noticed another garage, the yellow flag being the central attraction for a seeker

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for garages. Jacobus has many tales to tell of the flag's attracting powers.

Revenue, its Source and Volume.

But the flag does not constitute the main source of revenue; it is merely an example of the proprietor's methods of attracting and holding trade. Selling new cars, repairing and storage are the principal sources of income. The company has the agencies for Marmon, Ford and Moon cars and does a good business in these lines. One salesman is employed and Jacobus himself handles many sales. Last year some thirty cars were disposed of, a record not surpassed by many, if any, of the other dealers in that territory. Jacobus, however, is far from satisfied, and insists that if he were so situated that he could rid himself of the burden of detail he could double this figure.

How New Buyers Are Secured.

Information as to prospective buyers is secured from people who now are using cars sold by Jacobus, from the factories to which inquiries are sent, from those who inquire at the garage, a probable result of local newspaper advertising, and from leads thought out by Jacobus himself. To the prospect a letter is sent and with it a return postal card which the recipient is requested to fill out and drop in a letter box. This card, if returned, at once designates the prospect as a positive or negative quantity, so far as car buying is concerned. Among other things, it tells the capacity and price of the car he intends buying and also tells what car he owns. The effective feature of this card is that it bears a stamp for mailing and relieves the prospect of the trouble and expenes of finding a one-cent stamp.

In connection with the agencies, he attempts to give the word service its true definition—taking care of the owner is buiding trade for him. Those Montclair residents who have bought of him drive into the shop whenever they believe their cars are not performing properly and a free investigation results. Little things are not recorded by the bookkeeper, and if repairs are made the car owner is shown just what was done and how long was taken to do it.

Every car that goes into the repair shop is given a card marked "Repair Order." Among other things, this contains space for entries of different work done, the workman who did it, the time taken on each separate part of the overhauling or repair, and a reasonable charge therefor. At the same time each workman operates under a daily time card system and is directed to enter upon the card the work he has done each day and how long he took on each job.

"I tell them," declared Jacobus, "to account for every minute of the day. If the man sits on the bench and kills time I tell him to mark up so much time 'sitting on the bench,' but under no circumstances to charge time against a job on a car unless work actually was done on the car. Charging for idle time is responsible for many of the overcharges that have made the public sore on the garage trade. If a man puts in a half hour sweeping the floor, it goes down on the card, 'Sweeping floor—4:30 to 5,' or whatever the time was. I might stand for a man sitting on the bench, but I won't stand for a man robbing a customer by making him pay for that time."

Storage Rates and Gasolene Sales.

The painting for the garage is done on the second floor of the building, but is not done by garage employes. The proprietor rents space to a painter, who takes the garage work and exacts his own charges for it. This relieves Jacobus of the responsibility for this part of the labor, and at the same time assures satisfactory work, for the contractor-painter knows that it must be satisfactory or it will not be accepted.

The garage has capacity for 40 cars in storage, but the average number is 25. The rates range from $15 for small models to $25 and $30 for the large cars and limousines. Considerable of the storage is "dead."

Gasolene is retailed at 20 cents and is purchased for 15½. The monthly bill to the oil company is about $800, and the inroads into the gasolene trade by the small crossroads garages in the country are shown by the fact that when gasolene was 9½ cents a gallon wholesale and the small landscape-dotting supply stations were not so numerous the bill was about $1,000. That means gasolene sales have been cut in half.

I intend buying a .....passenger car at about $.....00.00. Any literature or information regarding such a car will be appreciated.

Signed.....

Street.....

Town.....

N. B.—I now own.....

RETURN POST-CARD WHICH SEPARATES WHEAT FROM CHAFF

DAILY TIME CARD

MONTCLAIR GARAGE AND MACHINE COMPANY

Workman ..... *Date* .....

Job No.	Name	Started	Quit	Hrs	What Doing

APPROVED .....
Foreman

CARD THAT "KEEPS TABS" ON THE WORKMAN'S TIME

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COMBINING THE ELECTRIC LIGHTER AND STARTER

How the Motor Is Cranked and the Car Illuminated by a Single System—Two "Light-and-Power" Plants Explained and Their Real Simplicity Emphasized—How Best to Care for Them and Where to Look for Trouble.

(This is the ninth of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render easier their care and repair by the dealer and owner alike.)

It is one of the well known advantages of electricity that it may be applied to a wide diversity of uses. Wherever electricity is used and the vendor is alive to the possibilities and advantages of extensive advertising, twinkling signs blaze forth the information (only it is not information to most persons) that it may be used for "light, heat and power." And, needless to add, it is just as much its wide applicability to these three essentials of industry, and life, as it is its convenience and its comparative simplicity that makes it so highly desirable and so valuable an adjunct to an existence which otherwise would prove mediocre.

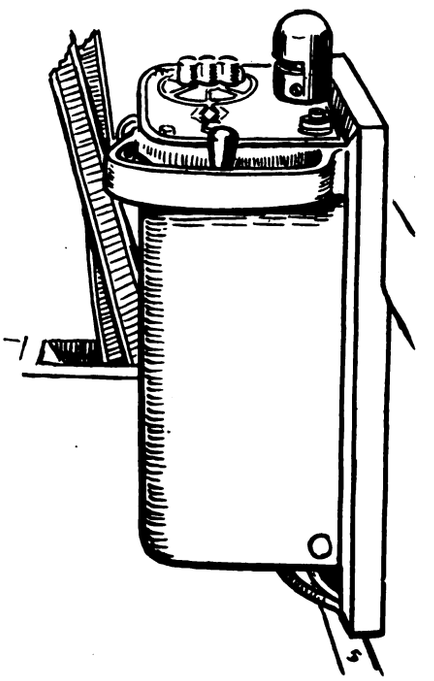
Of course, every one who knows anything at all about automobiles knows at least something about electricity; ignition systems have brought that about. Electric lighting is too well known to require any long dissertation upon its merits, and the electric automobile long since has made familiar at least one application of electricity to power. Electric heaters also are familiar, or, at least, they ought to be familiar, to those who ride in trolley cars. Latterly, the simplicity, cleanliness and dependability of the electric heater has served to draw attention to its applicability to a variety of other uses.

Power Required to "Spin" a Motor.

Heating, however, is what may be termed a side issue; it is supplementary to lighting and power systems. Given a lighting or a power system, and it is a very simple matter to add a heater or two at little expense and without any increase in complexity whatsoever. Heating is supplementary also in the sense that it may be dispensed with —not without discomfort in some cases— whereas power in an automobile, and lights, both are absolutely essential, as everyone knows. There is no call to explain the necessity for lights, nor is it necessary to point out why power is required. But it may not be quite so plain to the average person that something between one-half and one horsepower is required to "turn over" a very ordinary automobile engine of approximately 30 horsepower. Anyway, comparatively recent and authoritative tests have proven that it may not be as easy as it looks to "spin" a motor—that the expenditure of energy equivalent to one-half horsepower at least is necessary in most cases.

Value of Electricity's Manifold Uses.

The generation of such power—when it is represented by other than the muscle of th driver's good right arm—of course must be supplementary to the generation of the



APLCO CONTROLLER UNIT

power that drives the car. And in this connection there are few sources of energy available for the purpose that are more convenient or simpler, or, last but not least, more dependable than electricity. It is here that the value of its applicability for the combined functions of lighting, heating and powering become most apparent.

Steady Growth of Starting Gear.

Long before commercially practical so-called "self-starting" engines became available, electric lights were not only practical but were so firmly entrenched in the realm of things commercial that they rapidly became a necessity rather than a luxury. Today, electric lights are no more a luxury than is the "self-starting" engine; both are necessities. The early use of electric lights, of course, was due to the perfection of the storage battery, but though such systems were efficient after a manner and were highly desirable they were deficient in that there was danger of failure at unexpected moments due to exhaustion of the battery. In other words, no provision was made for maintaining the battery in a charged condition automatically.

It was not long, of course, before this condition of affairs was remedied by the commercial perfection of the small dynamo. But it was not until the small self-regulating dynamo was perfected that the manifold advantages of electricity in its application to heating and power loomed really large. With a practically inexhaustible source of current available, it was not very long before the possibilities for power became to be realized in their true light, and as a result the electric engine starter sprang into prominence almost over night. Now, there are very few automobiles listed without electric light equipment, and the number on which complete electric lighting and engine starting systems are installed steadily is increasing.

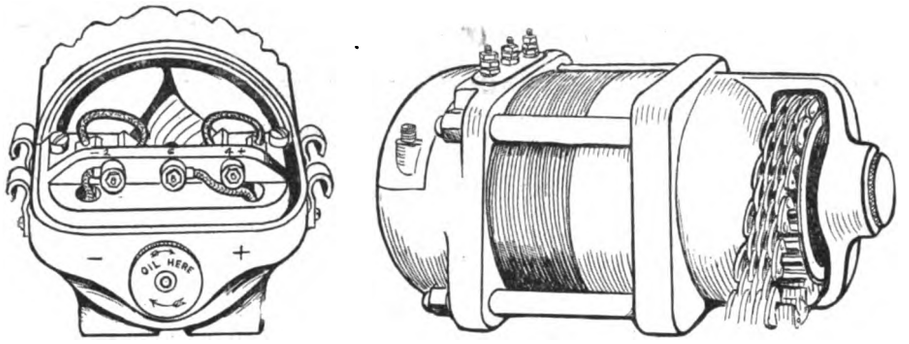
Combinations that Lack Complexity.

Contrary to expectations, the combination of an electric lighting and engine starting system does not necessarily add complexity to the automobile. All such combine' lighting and starting systems are as simple as are the plain lighting systems which have been described in detail in the last eight issues of Motor World. In fact, an intimate knowledge of almost any one lighting system is almost sufficient to instil an understanding of all such systems, whether they be lighting systems pure and simple or combined lighting and engine starting systems. The principles behind them all are so nearly identical that elaboration of individual systems is necessary only to bring out and make plain their individualities. No two are exactly the same in every respect and no single system, regardless of its apparent complexity, is the slightest bit too difficult for the average dealer or owner to understand, provided there is the will to make the slight application necessary.

The several different combined electric lighting and engine starting systems on the market can be divided into two general classes: Those in which the electric generator and the motor are separate units and

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those in which a single unit serves as both dynamo and motor. In the latter, advantage is taken of the fact that any dynamo will run as a motor or any motor will generate current when the armature is rotated.



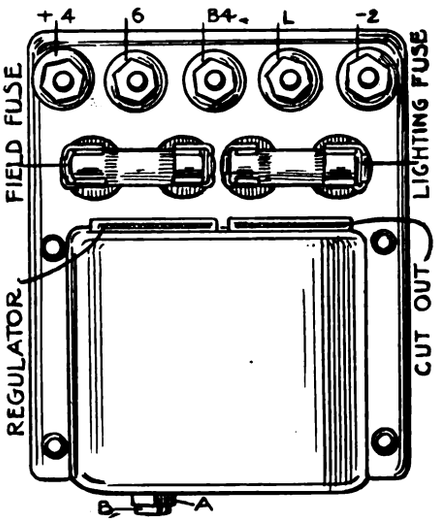
APLCO GENERATOR SHOWING CONNECTIONS AND DRIVE

This does not obtain, however, in the case of alternating current generators and motors, but as all automobile lighting and starting systems operate on direct current alternating current machines can be put one side and forgotten. Those systems in which the generator and the motor are combined in the same machine are further sub-divided into two classes: Those in which the motor generator takes the place of the engine flywheel, thereby eliminating all gear drives, and those which are geared in some manner to the engine, either through the timing gear train, which is the preferred method, or through a "silent" chain to the engine or to some part of the transmission mechanism.

Regulating With a Pile of Carbon Disks.

The Aplco lighting and starting system, which is manufactured by the Apple Electric Co. of Dayton, O., is of the latter type, the generator and motor being combined in a singe unit. The method of drive may be either through the timing gear train, by means of the pump or magneto shaft, for instance, or by means of a silent chain to any convenient rotating shaft, the disposition of the unit making no difference to its efficiency, provided only that it is properly mounted and driven at the proper speed.

As a generator, the machine is a plain shunt wound one and is automatically self-regulating as to current output. It is positively driven and its speed varies as the speed of the engine. The latter feature is essential, of course, in view of the fact that it operates alternately as a generator and as a motor. In order to obtain current regulation, the varying resistance of a pile of carbon discs on which the pressure is electrically varied, is employed. It is a simple, automatic field rheostat. When the armature is rotating slowly the carbon discs are pressed tightly together under the action of a spring. As the armature speed increases, pressure on the spring is released by an electro-magnetic device placed in series with the field, and as the carbon discs separate slightly their resistance to the passage of current increases, thereby reducing the field strength and consequently the output of the dynamo. When the armature speed decreases, the magnetic pull decreases, permitting the carbon discs to be pressed more tightly together.



APLCO DASH PANEL

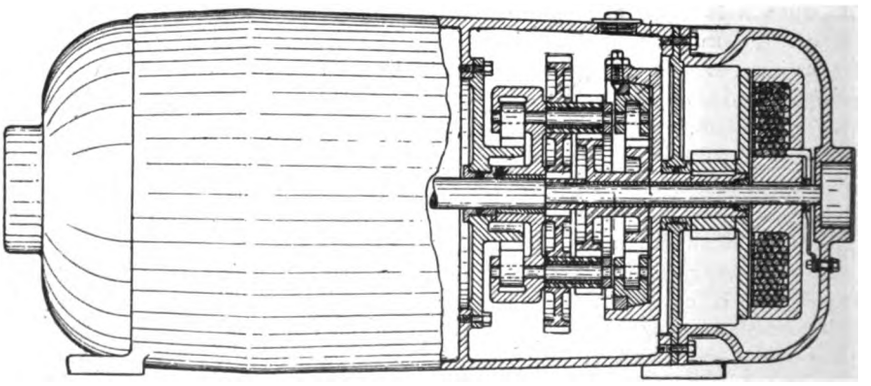
The automatic cut-out which disconnects the dynamo from the battery when the engine is stopped is an electro-magnetic device of the conventional form and the battery is a 15-cell unit so arranged that the charging rate is 6 volts, when the cells are connected in multiple, and the discharge rate through the motor-generator for starting the engine is 30 volts with the cells connected in series. The remainder of the system includes an automatic controller and a dash volt-ammeter.

Operation of Automatic Controller.

The purposes of the controller, which is illustrated herewith, are manifold. In order to start the gasolene engine, the spark advance lever must first be placed in the full retard position. Then if the controller handle is placed in the starting position it first connects the storage cells in series to deliver 30 volts and closes the ignition switch, and in the same operation connects the battery to the motor-generator, which for the time becomes a motor and "turns over" the engine. Immediately the engine picks up its own cycle of operations, the controller handle is returned to the running position much as an ignition switch is turned from battery to magneto after the engine has commenced to fire. Placing the controller handle in the running position automatically rearranges the cells in multiple to be charged at the rate of 6 volts. Thus all of the mechanism is completely enclosed and protected. The battery generally is carried in a tray beneath the floor of the tonneau.

Care That Is Required in Operation.

In caring for the system, there is little that will require attention other than the brushes and the commutator. The automatic regulator is so constructed that it will never require to be touched from one year's end to the next. There are no contacts in it, and the very slight movement of the arm which controls the spring pressure on the carbon discs precludes the possibility of wear or sticking. Nevertheless, it can do no harm from time to time to make sure that it is operating properly by watching lamps carefully as the engine is speeded up. If they exhibit signs of flickering, wiring connections should be gone over carefully to make certain that there are



PARTLY SECTIONED VIEW OF PARIS MOTOR-GENERATOR SHOWING GEARING

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no loose or broken wires. The automatic cut-out is another device which is best let severely alone unless it gives evidence of serious derangement. The contacts of the cut-out should be cleaned at least once a season, though there is little reason for touching them oftener unless the device gives trouble, which is unlikely.

What To Do When the Lights Grow Dim.

If the lights gradually dim when the engine is stopped, it is practically certain that the cut-out is not performing its functions properly and is permitting the battery current to pass back through the dynamo. Though it is not a likely occurrence, the contacts might stick together, in which case they should be separated and cleaned before the machine is again put in operation. Much the same trouble (lamps gradually dimming) would be experienced if the cut-out should fail to make the connection between the battery and the dynamo, for the battery then would exhaust itself, there being no current put back into it for the current drawn out. In either case the remedy is simple and self-evident.

The controller box contains nothing but rugged switches, and as there is nothing in it to get out of order even under the most severe usage, it will never require to be touched after it is once installed. A volt-ammeter is supplied with the system and serves to indicate the charging rate of the dynamo when the engine is running. If, with the engine running, the meter fails to indicate, it means either that the generator is not generating or that a wire has become broken or loosened. Broken wires quite naturally can be found only by searching for them.

Trouble That Lurks in the Commutator.

Failure to generate can be traced in the majority of cases to a dirty commutator or to worn or dirty brushes. In the Aplco generator the brushes are formed of a self-lubricating compound and should run for an indefinite period without attention. Despite elaborate precautions to prevent the ingress of dust, foreign matter will find its way in, and it must be removed periodically if the machine is to operate at maximum efficiency. The brushes and brush holding mechanism is enclosed by means of a hinged cover which may be removed quite easily, exposing the wiring. Occasionally the brushes should be taken out and cleaned. Before they are replaced, the commutator should be examined to make sure that it does not harbor an accumulation of grease and dust. If it appears unusually dirty it should be cleaned with a cloth dampened but not wet with gasolene. If, however, it exhibits a glazed, brownish appearance, which is altogether likely, it should not be touched, for it is then in the best of condition. If it is scratched or burned it should be smoothed down by holding a piece of No. 00 sandpaper against it while the machine is running, the brushes first having been removed.

Combined with the controller box is a rotary lighting switch for switching on the various lamps, any lamps or any combination of lamps being easily obtainable by simpy rotating the switch handle. One of the peculiarities of the system is the locking device, by means of which it is possible to lock the controller handle or the lighting switch in any position. Once locked, it is impossible to start the engine or stop it, as the case may be, or turn on or off any of the lamps.

Eliminating Trouble by Testing Circuits.

The regulating mechanism is contained in a panel which attaches to the dash of the car, the same panel serving also as a distributing block and a fuse block. When the car is running at about 15 mles an hour the volt-ammeter should indicate that the dynamo is charging the battery If the hand remains at zero the field fuse should be examined first to make sure that it has not blown out. If is has blown out a new one should be inserted. If the trouble remains the tension of the brush springs may be slightly increased by turning the screws marked A and B in the accompanying illustration. If the trouble is not cured, loosen the locknut A shown in the picture of the panel and screw in or out on the adjusting nut B about one-quarter turn. Screwing in increases the output at a given speed; screwing out decreases it. If the trouble still remains, temporarily short circuit the regulator panel by attaching a wire between + 4 and 6. If the hand of the ammeter then indicates charging there is some defect in the regulator panel, in which case it is recommended by the manufacturer that it be removed and returned to the factory for adjustment.

How to Adjust the Cut-Out Mechanism.

If, however, the hand of the meter still stands at zero, short circuit both the regulator and the cut-out by connecting + 4 and B 4 with a wire, leaving + 4 and 6 connected. If the meter hand now swings to the discharge side, the trouble is in the generator, which should be returned to the manufacturer, provided the trouble is not with the brushes or the commutator and cannot be remedied.

If, with the panel short circuited as stated, the meter hand swings over to the charge side, it indicates that the generator is charging, but that the tension on the cut-out spring is so great as to prevent that device from performing its functions. To decrease the tension, remove the cut-out housing and with a small screwdriver take out the locking screw which is under the cap. Under the locking screw there is an adjusting screw which, when turned to the right, increases the tension, and when turned to the left decreases the tension. If the tension is only slightly too great, this fact will be made plain in oscillations of the meter hand as the cut-out connects and disconnects the battery and the dynamo.

Shifting Gears With a Magnetic Clutch.

The Paris electric lighting and engine starting system which is manufactured by the Paris Electric Starter Co., of Chicago, Ill., is similar to the Aplco system in that it employs a combination motor generator unit. The unit itself, however, is quite different and is driven and drives through an automatically controlled set of gears which permit the armature shaft to be driven by the engine at three times crankshaft speed, while a reduction of 30 to 1 is automatically obtained when the unit is employed as a motor to start the engine. The arrangement of the gearing is illustrated in the accompanying picture, which shows the motor-generator partly sectioned. The operation of the gearing is entirely automatic, gears being shifted by means of an electro-magnetic clutch. Pressure on the starting button first shifts the gears to permit a driving ratio of 30 to 1, and then switches on the battery current, thereby causing the motor to start the engine. When the engine starts the gears are automaticaly shifted, and while the motor-generator is operating as a generator the gears are locked solidly, so that they act much as a flywheel and do not move upon themselves.

Variable Voltage Automatically Obtained.

As is the case with so many other systems, the regulation is electrically obtained. the regulating mechanism being contained with the cut-out, which also is an electro-mechanical device. Both are contained within the dynamo itself, particular pains having been taken to place them out of the reach of prying fingers. Both devices are simple in construction and positive in action, and as they are completely enclosed should give no trouble whatsoever. The care of the brushes and commutator made plain for every other system is the same in this case and is embraced in keeping the brushes clean and the commutator in the condition where it exhibits a glazed, brownish appearance. The voltage of the Paris system is 6 volts for lighting and charging and 24 volts for starting, the necessary alterations in the battery connections being automatically made when the starting button switch is operated.

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DEALERS MUCH DISCUSSED AT DETROIT MEETING

(Continued from page 9.)

"Well, first of all, we can impress upon the dealer's mind the thought that he is in business to make money, and that he should conduct his business with an eye to the net profit. Once he has got this idea, it should be pointed out to him that he has little chance to make a profit unless he gets the list price. I am thoroughly convinced that we, as manufacturers, should take a firm stand for the list price.

"Establishing a list price and getting it is, first of all, a matter of setting our prices as low as we can, considering conditions of competition and consistent with our own profit; and then fixing a fair and not too long dealer's discount. I believe heartily in a liberal discount to the dealer. He is entitled to a margin that will give him a fair chance to make money. But my observation and experience teach me that fictitious pricing and unusually long discounts are wrong policies. They may produce results that seem satisfactory for a time, but in the end they lead to trouble and usually to failure. . . . .

Seeking to Avoid Over-Production.

"This leads us to the conclusion that over-production — or, rather, how not to over-produce — is another of our selling problems. I am not one of those who think there are no limits to the number of cars than can be sold if produced.

"The way to be surest of selling your entire output at a profit is by being sure that output will come within a normal demand. Forced selling is rarely, if ever, profitable. There is bound to be a time reached when this country's market for new cars is going to be very much smaller than it has been in the past, and if we are thoroughly alive to our own best interests we will study conditions very carefully and base our production schedules on what we actually know and can intelligently foresee, rather than on guess work, or on what over-enthusiastic distributors think they can sell.

"The number of cars a dealer can sell in your office is often quite different from the number he can actually sell in his territory. We will have enough selling problems always without over-production, so let's under-produce rather than over-produce.

When Buyers Out-Sell Dealers.

"Another of the great problems of our business is that of handling second-hand cars. No doubt it is a common occurrence with all of you to have your dealers complaining that an ever-increasing percentage of their sales involve trades. It means usually the making of two sales in order to earn one profit, and unless a dealer is very careful and a shrewd trader, it is apt to mean two sales without any profit. No end of automobile dealers have traded themselves out of business. Automobile selling very often just gets down to a question of whether the man with a used car is a better salesman than the dealer who is trying to sell him a new car, and it not infrequently happens that the owner proves to be the better salesman, selling his old car to the dealer at a better profit than the dealer makes in selling the new car to the owner of the old one.

Committee to Consider Used Cars.

"All dealers say that this trading and second-hand problem is one of their biggest ones and that it is getting bigger all the time. Yet when you ask them what can be done about it, or what suggestions they have, most of them are unable to offer anything encouraging. . . . In other words, there seems to be just a hopeless feeling among automobile dealers on this question, a feeling that it is one which is always going to be troublesome and about which nothing can really be done. I am by no means convinced that something cannot be done. I have the following suggestion to offer: It seems to me that some of our problems, and especially this problem of second-hand cars, are analogous to the national problems of the railroads and the tariff. May I suggest, therefore, the advisability of considering the appointment of a committee from our members to go into this whole subject very thoroughly; to study it in a careful way, so that we may know whether it is possible to adopt any policies or measures that will help all of us and all of our dealers in the handling of this problem.

Influence of Weather on Sales.

"The greatest obstacle to the sale of automobiles is a natural obstacle, and one which we can never entirely overcome. This greatest obstacle is bad weather. We cannot change the weather, but we can take measures which will minimize the effect of fall and winter weather on our business. The first thing I believe we should do is to change our own seasons. I am one of those who believe in yearly models, but I am coming to believe that we have picked out the wrong time of the year to announce our yearly models. . . .

"Next to the very car itself, the greatest selling force we have is warm weather and sunshine. Our sales curve should be a semi-circle, with its apex in July, which, by reason of the weather, is logically the best season for selling automobiles. But it is not. The reason our sales curve is a camel back is that our production curve is that way.

Story Told by Production Curves.

"Our production plans are wrong. Look at your curve of production. You will find it also has two bumps—one in the spring and one in the late summer and early fall. It is at its lowest point in midsummer when it should be highest, because we end our season then and start on new models, which always come slowly at first. In other words, we get our maximum production in the poorest selling season, and our minimum production when sales should be highest. When the weather is most favorable to big sales, we are engrossed with the new models.

Favors January Instead of July.

"These conditions are not right. It is to our interests and certainly to the interests of our dealers to make our biggest deliveries in the heaviest selling season. I think it is time for us to consider very seriously whether we ought not to announce our models just before January first, rather than in July. . . . This plan also would revive interest in the shows. The shows would then return to their original purpose —namely, that of displaying new models for the first time to the public. The production of a new model is always slow getting under way. This unavoidable slowness would not make so much difference in December or January as it does in July and August.

"There would be less storing of cars. We would have a long, uninterrupted season of production and selling. We would get under way gradually and our production curve would reach its highest point in the same months the selling curve naturally would reach its highest point. We would not have to put on tremendous force for a few months, only to let down when the cold weather comes on. We would start our campaigns in the cold weather and gradually build up as the season naturally opened.

Harm of Exaggerated Advertisements.

"Another problem of selling in which I believe we are all vitally interested is that of advertising. Advertising is not the answer to all business problems, as many advertising agents whose tongues are more eloquent than their brains are logical, would have us believe. Some splendid business successes are still built up without advertising. It is true they are rare, but there will probably not come a time when this condition will not be true. Automobile advertising has suffered from mediocrity, just like other kinds of advertising—whether more or less, it would be hard to say. What automobile advertising has suf-

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fered from most, however, is exaggeration. Perhaps some of it has suffered from more than exaggeration.

Honest Advertising Is Essential.

"Of nothing am I so thoroughly convinced as that the greatest single factor in successful advertising is absolute honesty and sincerity of statement. I question whether we like the advertisement which exaggerates, any better than we like the person who exaggerates. I question whether we like the advertisement that brags and blusters and blows, any more than we like the person who has these undesirable traits. I question whether we like the advertisement which is egotistical and uselessly wordy any more than we like the person who is that way.

"Advertising is the expression of the character of a business It is simply a business standing up and expressing itself to the people. Why should the rules of what is proper in an advertisement be different from the rules of what is proper and admirable in a person? The public gets its impression of the automobile business, as a whole, very largely from our advertisements, and therefore, it seems to me to be of the utmost importance that we try, all of us all of the time, to put out advertising that has the qualities of honesty and sincerity and simplicity."

Benson's Views on Territory Allotment.

E. R. Benson, sales manager of the Studebaker Corporation, discussed the subjects "Territory and Discounts," and threw light on the factors that decide not merely the allotment of territory but the side of discounts that may be quoted, although he did not deal with actual figures.

"Formerly there were two distinct views on territory," said Benson, "and they often seemed to be diametrically opposed. One was the manufacturer's view and the other one was the dealer's. It was the manufacturer's idea, to some extent, to confine the dealer as much as possible in territory; and it was the dealer's idea that he should have all the territory that he could possibly get from the manufacturer. Both the manufacturer and the dealer have altered their views during the past few seasons, and now they are much nearer together than they have ever been before. The manufacturer knows that dealers, to be satisfactory, must conduct a profitable business, and that sufficient territory must be given out of which to get a good business and make it profitable. The dealer knows that he cannot handle a large territory profitably without a sufficient amount of money, putting quite a large capital into his business, and supporting a large organization. In the division of territory there are many things that must be considered, and one thing of great importance is to find the trend of the market, i. e., where the people buy . . . .

"It is obvious also that it would be a very difficult matter for a dealer to maintain himself in one corner of a district while the natural trading point would be in another center. It would cause the dealer extra expense and trade would get away from him which would go to the dealer who might be located in the genuine trade center. This is to be watched with extreme care, as it has a great deal to do with the sale of motor cars. . . . One of the hardest problems in connection with territory is finding ways and means to keep the dealer energetically, wisely and thoroughly working the district assigned to him. This, in some ways, is a greater problem than the division of the territory itself. . . .

Difficulty of Adjusting Discounts.

"Discounts must essentially be weighed from many angles, as manufacturers' interests lie so widely apart—one manufacturer producing a very large number of cars at a low price; another, a very much smaller number at a much higher price; and another, a large number of cars at a medium price. All these conditions demand different terms, both on territory and discounts. The discounts are naturally segregated into several classes. . . . In considering discounts to dealers, it is necessary to take into account the amount of stock which the dealer is able to carry (this would apply both to cars and parts), and the season of the year when he may accept his deliveries. We are always looking for the ideal dealer who will take a specified number of cars each month the year around and pay cash for them, and in addition will always keep on hand a good stock of parts so that service will be given to his patrons in an ideal way. These dealers are increasing in number as they are becoming cognizant of the fact everywhere that this is the best way to conduct the motor car business."

Pope Advocates Standard Guaranty.

"Why All Manufacturers Should Use a Standard Warranty" was the subject of a paper by A. L. Pope, president of the Pope Mfg. Co., which, in Mr. Pope's absence, was read by L. H. Kittridge, of the Peerless Motor Co. As the title implies, it was an argument or plea for the general adoption of the N. A. A. M. guaranty, the advantage of which was strongly pointed out.

H. O. Smith, president of the Premier Motor Mfg. Co., discussed "Yearly Models," R. D. Chapin talked of "Good Roads" and M. L. Pulcher, of the Federal Motor Truck Co., to whom had been assigned the topic "Injudicious Methods of Selling Commercial Vehicles," pointed out the abuses which had arisen. He intelligently discussed the demonstration and service problems and decried the cut-throat species of competition with which the truck trade is too greatly afflicted. Pulcher, in substance, stated that there was ample room for all truck makers and that no sound reason existed why they should "knock" or otherwise seek to tear down each other.

Miles on the N. A. A. M.'s Performance.

Samuel A. Miles, general manager of the N. A. A. M., made more than usually good use of the apparently dry subject, "The N. A. A. M.—What it has Accomplished and What May be Accomplished." He traced the work of the organization, with which he has been so closely linked, and brought sharply home to those present that it had been a more potent factor than many of them had considered was the case. He also outlined the avenues for future endeavor and of the better results that could be obtained if there was but one national organization in existence, plainly indicating his sympathy for the proposed amalgamation of the Automobile Board of Trade with the N. A. A. M. which has been hanging fire for nearly a twelvemonth.

"Traffic" was discussed by J. S. Marvin, traffic manager of the N. A. A. M., and, as always, it was ably discussed. Marvin pointed out in plain terms the crists that will ensue if the freight car shortage becomes more acute and indicated some of the means by which the danger may be averted; he, of course, urged the co-operation of everyone connected with the trade to the end of prompt loading and unloading of all freight cars with which they may have to do.

Dealers and Freight Overcharges.

Marvin also pointed out that the amount of freight charges and shipments from automobile factories to automobile dealers approximates not less than $6,000,000 or $8,000,000 per year, most of which is paid by dealers, who, in very many instances, are overcharged without their knowledge and through clerical errors. Since the N. A. A. M. volunteered to check up all freight bills forwarded by dealers many overcharges have been discovered. In the case of one factory alone, 19 dealers who had forwarded freight bills were found to have been overcharged $1,100. Marvin pointed out how overcharges may occur when trucks may be billed as "automobiles," or when bodies may constitute part of a shipment, and also how the size of freight cars may influence minimum rates which may be charged. He called attention anew to the fact that the N. A. A. M., without charge, is willing to audit all freight bills which may be forwarded by dealers and

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hoped that the practice would become general.

Beecroft Discusses Truck Delays.

David Beecroft, editor of Motor Age, treated the subject of "Transportation Delays at Railroad and Dock City Terminals," and laid great stress on the inefficiency of the average horsed vehicle and introduced statistics to show that in a great many cases motor trucks were compelled to wait nearly twice as long during loading and unloading operations as was required to make a round trip between destinations. These long waits, he pointed out, were due in many cases to the inveterate laziness of drivers of horsed vehicles, who had become accustomed to slow speed and who have been known wilfully to precipitate traffic blockades that have lasted from five minutes to more than an hour in order that they might adhere to their schedule of not more than three loads a day. One instance was cited in which a recent blockade in Chicago involving between 155 and 175 vehicles, mostly drawn by horses, lasted one hour and twenty minutes and finally was broken up only by mutual agreement between the drivers. It required less than five minutes to break the blockade.

That such conditions can be ameliorated, he explained, is made plain by the fact that the special facilities which are provided for the handling of perishable goods reduce the time required in handling by at least 75 per cent. Already a number of freight handlers have realized this fact and have instituted remedial measures evident in the payment of stipulated salaries to employees, supplemented by bonuses which are offered as a reward for performing more than the stipulated amount of work in a given time.

Inadequate Clerical Force an Evil.

Another source of delay to which he drew attention lay in the inadequate force of clerks provided at many terminals. Often, he pointed out, as many as 40 motor trucks have been lined up from minutes to hours while their drivers patiently waited for their bills of lading. Whereas the owners and drivers of horse-drawn vehicles are not adverse to such delays, but rather welcome them for the reason that their draught animals must be rested periodically, they represent a specific loss to the motor truck owner.

Talking to no set topic but voicing a subject which is near to his heart, John C. Wetmore, of the New York Evening Mail, made a strong appeal to manufacturers for the support of sport. He stated that there is practically nothing else which permits of so much newspaper publicity and of conspicuously keeping the automobile in the public eye.

N. A. A. M. BANQUET PROVES A SPLENDID JOLLIFICATION

More Merriment Than Oratory Marks the Occasion — Clever Skit on Freight Car Shortage to Impress Railroad Men.

The banquet at the Pontchartrain on Thursday night, which punctuated the N. A. A. M. convention, was a more than ordinarily enjoyable function. The set pieces of oratory were few and far between, professional entertainers providing most of the merriment. Several character sketches and songs were rendered and a "little German band" furnished music, in which the diners joined. Not to mention a "turn" on an Italian hand-organ performed by W. E. Metzger, president of the N. A. A. M., the hit of the evening was made by a quartette garbed as railroad employes which enacted a farce written by H. W. Ford, chairman of the Detroit banquet committee, in collaboration with Traffic Commissioner Arthur T. Waterfall of the Board of Commerce, which detailed with considerable effectiveness some of the experiences manufacturers have had with railroad men in their efforts to obtain a sufficient number of freight cars and to obtain them at the proper times for the prevention of delayed shipments.

Proceeding to the speakers' table, the quartet beseeched E. B. Boyd, assistant vice-president of the Missouri Pacific Railroad, and Nat Duke, assistant traffic manager of the Delaware & Lackawanna Railroad, to help them out in their quest for wide door automobile cars, which these officials promised to do.

About 200 were present at the banquet. Abner E. Larned, as toastmaster, facetiously welcomed them in the name of the Wayne county grand jury, of which he is chairman.

Among the speakers were: President William E. Metzger, L. W. Goodenough, John C. Wetmore, Hal H. Smith, George T. Moody and James Keena. Others at the speakers' table were E. B. Boyd, Nat Duke, Henry Ford, Hugh Chalmers, Henry B. Joy, Thomas Henderson, L. H. Kittridge, R. E. Olds and H. O. Smith.

Among the special guests were: Edsel B. Ford, A. B. Atwater, assistant to president, Grand Trunk Railroad; J. S. Bartle, assistant traffic manager, Atchison, Topeka & Santa Fe Railroad; W. C. Rowley, general freight agent, Michigan Central Railroad.

The several business sessions were largely attended, practically every manufacturer in the trade being represented by one or more officials, while the banquet was even more largely attended, plates for nearly 200 being set.

Court Upholds Laciar's Attachment.

Although the Appellate Division of the Supreme Court of New York, First Department, reduced from $15,000 to $4,000 the amount of the attachment that Robert J. Laciar secured against the Jackson Motor Co., of New York City, at the beginning of a lawsuit, the higher court last week refused to dismiss the attachment and the writ which was placed upon the company's bank account and several cars still stands as modified. Laciar asked $15,000 following his discharge as sales manager, which he claimed was unjustified, as he had made exceptionally good and sold many cars. Part of Laciar's claim is not represented by actual monetary damages which can be put down on paper as such, and the court cut the figure to this tangible amount, consisting of commissions, etc. The Jackson company sought the vacating of the attachment.

Two Years' Inactivity Ends Incorporation.

The New York State statute which, as is not generally known, states that a corporation which does not organize and begin operations within two years of the date of its incorporation ceases to exist, has been upheld by Judge Goff in the Supreme Court for New York county in overruling the demurrer to the complaint in the case of the attorney general against Arthur Stilwell and others, the case, however, having no direct bearing on the automobile industry. The decision, rendered Monday last, 28th inst., was to the effect that since Stilwell and his three co-incorporators had failed to organize and begin operations within the two years specified the complaint of the State, asking for dissolution, was good and sufficient and not to be successfully demurred to.

Pittsfield to Lose Another Factory.

The Specialty Mfg. Co., of Pittsfield, which produces several automobile accessories and of which Wiliam P. Wood is treasurer, is preparing to remove to Hoosick Falls, N. Y., whose chamber of commerce has placed a factory at its disposal and provided other advantages. According to the agreement, the removal must be completed before the end of the year.

Moon Declares Another 10 Per Cent.

The Moon Motor Car Co., of St. Louis, has declared a 10 per cent. cash dividend, payable from its surplus. It represents the second dividend declared this year and is the fourth consecutive distribution of 10 per cent.

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STOPPING THE LEAKS IN REPAIR SHOP PROFITS

Principle of Orderliness and the Right Way of Doing Things, Which Is the Basis of System, Applicable to Little Repair Shops as Well as Big Factories—Practical Conditions That Must Be Considered.

From the point of view of the man who is interested in the engineering side of the motor car industry, there is nothing connected with the business that is more striking than the absolutely systematic methods which prevail in large manufacturing establishments, in factories of moderate capacity and in most of the large garages and repair shops. It has been found that a certain degree of system is necessary in order to keep a large business running at all, and that a still more elaborate system is conducive to all-round cost reduction, when properly applied.

What is Meant by System.

System consists largely in finding the best possible methods of doing certain things, and seeing that such methods are followed out. System not only covers the mechanical processes by which machines are manufactured or repaired and the methods of keeping track of parts during manufacture or repair and of the time of the men doing the work, but also embraces such important matters as shop lay-out, lighting, the location of machine tools, benches, etc., and the general shop conditions under which the work is done. It is a matter of common knowledge that the establishment of conditions which are conducive to the comfort and welfare of the men and which make the work as easy as possible, are conducive also to increased production, cheaper production and better production.

All this has come to be axiomatic; no manufacturer would think of establishing a factory with a view to its profitable operation without giving the closest attention to the systematizing of everything in connection with his business. And yet one hardly can throw a stone, so to speak, without hitting a repair shop or a garage that is run —or, rather, that runs itself—without pretence of system of any kind.

Guessing that is Unprofitable.

The idea seems to be that a small shop, which is dominated by a single man, perhaps, has no need of system, and that things can be run haphazard just as well as any other way. A dozen different shop or garage proprietors probably would express this idea in a dozen different ways; but the basic notion always is the same. Certain men are capable of doing certain work; they are supposed to do it regardless of shop conditions. A lathe or a drill press must be used on certain jobs; the machines are installed without regard for the appropriateness of their positions to the work they are to do. Space is required for cars under repair; any space at all will do, regardless of lighting, drainage or convenience to machines or benches. The proprietor estimates that a given job will require a given time for its completion; if his estimate is wrong he has no means of checking up to find out what upset his calculations, except perhaps the mechanic's recollection of about how long he was engaged on each part of the work—and, needless to say, this is anything but a reliable check. The original estimate is a guess; the cost of doing the work is a guess; the amount of the bill rendered is a guess; and the amount of the proprietor's profit at the end of the month is a guess—tempered somewhat by the probability that the figures will be less than the proprietor expects.

Small Size No Excuse for "Sloppiness."

The principles which apply to the laying out and management of a big shop apply also to the laying out and management of a small shop. It must be obvious that if the best of conditions are required for the production of the best results in large shops, the same holds true for smaller establishments; the size of the shop does not alter the principle.

The two worst enemies of system are mistaken ideas of economy and what is expressively referred to the vernacular as "sloppiness." The best possible definition of the term is obtained by a survey of the dingy, disorderly jumble that characterizes the average small shop devoted wholly or in part to the execution of automobile repair work. The first impression received upon entering such a place is one of darkness. It is not always possible to provide plenty of windows—in fact, sometimes it is impossible; but it always is possible to wash windows. The amount of light that can be excluded by a film of dust is simply astonishing. The shop should be fitted and equipped with a view to making the best possible use of the available sources of illumination, and as the hues imparted by dust and grime are capable of absorbing a great deal of light, the walls, ceilings, posts and everything that can be so treated should be coated with white and the coating renewed as often as it shows a tendency to become gray.

Natural and Artificial Lighting.

As light is required in reasonable abundance, it stands to reason that if it cannot be obtained through glass from the natural source of illumination, artificial methods should be resorted to. And it may be added that white walls and ceilings are as valuable in the conservation of artificial light as of natural light. Lights should not be placed until the layout of the shop has been decided upon, so that each lamp can be located to the best advantage. It is economy in the long run to use good, strong lights and provide easy means for turning off those not in actual use. A little system in this matter of handling of lights, a distinct understanding as to what is to be done, will keep the lighting bills far below the figure they are sure to reach if there is no strictly enforced rule against the waste of light. It should be borne in mind, however, that there is a vast difference between using plenty of light for legitimate purposes and wasting it; stinting light on a job means loss of money in time and the quality of work. To give a single example, it is not very difficult to appreciate that a man's efficiency is considerably reduced, if he has to work with one hand while holding an inconvenient light in the other, or if he has to waste time rigging a light so that it will shine where he wants it to, or if another man, no matter how low his wages, has to act as a lamp holder.

Illumination of the Machine Tools.

Machine tools and benches should be located where they will receive their share of light and, as far as possible, should be so placed as to entail the minimum movement of parts. A workman is earning no money when he is walking about the shop carrying work to or from the machines or benches. This matter of location also has an influence on the size of the lighting bills. For example, a bench vise is used for a far larger proportion of the time than a lathe in a small shop, and, for this reason if for

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no other, the bench should be placed near a window. Thus the light most used will be the light that costs nothing, while the light that has to be paid for will be used only as occasion demands. On the same principle, much-used machines should be placed where they will utilize the cheapest light.

Cutting Out Work that is Unnecessary.

Nine times out of ten a job will go to a bench before it will go to a machine; therefore a bench should be closer to the car from which parts are taken than the machines. The principle is the same as that involved in the "routing" of parts in a big factory—that is to say, everything is planned so that each part will travel the shortest possible distance during the various processes of manufacture. It is well to avoid, if possible, the awkward and yet not uncommon layout in which there is a row of benches against a wall, a row of machines parallel with the benches, and outside of the machines an open space for the cars under repair. This arrangement necessitates lugging parts from the cars around the machines to the benches and often back by the same route to the cars without stopping at the machines. It is, of course, impossible to advise just how such things can best be done, for everything depends upon the many variables of shop form, window locations, the running of shafting, position of doors and a score of other things. But with the principles in mind there should be little difficulty in arranging everything so as to avoid conspicuous inconveniences at least, even if the very best possible arrangement is not hit upon immediately.

Taking Care of the Shop Tools.

One of the most familiar sights in small shops—to say nothing of some shops that are distinctly big—is that of a motor or transmission lying on the floor and a couple of men working squatted down or bent double over it. In either case they are incapable of working efficiently, because they are in awkward and inconvenient positions and tire easily. There should be low, heavy stands for such things, so that heavy car parts can be conveniently examined and worked on from all sides, and such stands, if not built as bench extensions, should be close to benches or else mounted on heavy castors so that the least possible time will be wasted running to and fro.

Part of the system of every shop, no matter how small, should consist in a method of looking after such tools as are not the personal property of the men employed. For instance, taps and dies, pipe-cutters, reamers, special wrenches, gauges, lathe tools, drills, and so on, belong to the shop. In a large establishment these things usually are looked after with the utmost care. Each item is made to give the greatest possible service in proportion to its cost and every piece is accounted for. There are few small shops, on the other hand, where it is not rather easy for things to get lost or broken, by no one in particular, of course.

While it is unnecessary and impracticable in a shop where there are very few men to make use of an elaborate tool checking system, there should be at least some understood method of procedure. For instance, all shop tools of the kind that are occasionally used—such as taps and dies, reamers and the like, as opposed to lathe tools and drills—should have their own particular places, and a man who takes out a tool should return it to its place as soon as he has finished with it, and if anyone else needs it he should take it from its place and not from some other man.

Everybody's Business is Nobody's.

This may savor somewhat of red tape for small shop purposes; but it is not likely that a shop can run for many weeks without the occurrence of something that will justify the small amount of extra trouble—even if only in the ease with which everything is found when it is wanted. Moreover, if a man takes out a tool and finds it broken or otherwise in bad condition, it is far easier to locate the responsibility than if the tool was found on a bench or on the floor, with no one accepting responsibility for its condition.

System should prevail in keeping shop tools in condition. This does not mean that there sholud be a hard-and-fast time for overhauling the tools, as there might be in a big shop, but that it ought to be the business of some one man to do whatever work is necessary and to do it whenever it may become necessary. What is everybody's business is nobody's business, and nobody's responsible.

The Junk Pile on the Lathe Bed.

The commonest way of taking care of a set of lathe tools, and the way that is most favored, apparently, in shops of the "sloppy" variety, is to lay them out on the bed of the lathe back of the tailstock, because that part of the bed seldom is used and makes a convenient place to throw things. Sometimes the shears are protected by a board and sometimes they are not, and it is needless to say that in the latter case the accurately finished surfaces are sure to be more or less nicked and marked in time. When a long job comes along the tools usually are piled up on the floor or some nearby bench, and when they are returned after the completion of the job the lathe man does not know for certain whether or not he is putting back all the stuff he took away from the machine, and, moreover, he loses time in the double transfer. It is by no means an expensive or a difficult matter to arrange a rack for such tools, consisting of a vertical boards with hooks, pegs or even nails to receive the tools.

What is Gained by Knowing Things.

The man who runs a small shop is, or ought to be, just as desirous of knowing where he stands, financially, at any given time, as the stock company that operates an extensive factory. In a shop that is run with no regard whatever for system—just because it is considered so small that a system would be worse than useless—it is a safe assertion that the proprietor never knows the state of his finances until he can actually compare the amount of cash in his pocket with the bills on the spike on his desk. Of course, he can guess at the proceeds of the work in progress in the shop, at the probable amount of time and material that each job has absorbed and at the probable amount he will have to put on the bill in order to show a profit. But, as has been indicated already, all these things will be guesses, and in very many cases decidedly bad guesses. Except in a very general and more or less vague way, the boss does not know which of his men are the most profitable, what jobs are capable of yielding the best returns, what work he can do a little cheaper without losing much profit, or what he must charge a little more for in order to make it pay—in short, he only knows that at the end of the month, when the bills ocme in, he has made so much more than he has to spend, or the reverse, as the case may be.

Things To Be Considered.

In order to keep this matter of finances quite straight, it is necessary that the work should be done under a system that will take cognizance of every detail of each job.

In doing a piece of work on a car there are two items to be considered—namely, the actual time required to do the work and the amount of material used. It is not enough to know that the car has been in the shop for a certain length of time; it is not even enough to know that so many men have worked on it for so many hours. It is necessary to know how much time each man spent on each part of the work.

There is real value in the knowledge that it took a certain man so many hours to take down the gearset of a car, renew the bushings and replace it, for it gives a line on the cost of doing this particular part of the work, whereas the knowledge thath it took so many hours to overhaul the whole car would give no inkling of such details. A system that keeps "tabs" on such matters, therefore, is of value in other respects than that of enabling the proprietor to figure his monetary financial status.

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In the RETAIL WORLD

O. B. Jones has purchased the interest of Dr. H. W. Hall in the garage business of Heintz & Hall, San Bernardino, Cal.

Charles Leigan and Detlef Tiedje have entered the trade in Atlantic, Ia., under the style Essenkay Sales Co. As the name indicates, they will sell tire filler.

D. Levy & Sons of Baltimore, Md., are to build a one-story garage, 80 x 112 feet, on Colvin street, near Exeter; the plans call for an expenditure of $30,000.

John Preston has bought the Fannin County Garage in Bonham, Tex. H. Seay and Fern Everheart, the former owners, have retired from the business.

John A. Thomas has purchased an interest in the firm of Trachte & Woerpel, in Dodgeville, Wis. The style hereafter will be Iowa County Automobile Co.

Fred Linzy of Auburn, N. Y., has bought the interest of his partner, Floyd Selover, in the Empire Garage, on Water street; Linzy will continue the business.

Having been reorganized, the Iowa Auto & Tire Co., of Davenport, Ia., hereafter will be known as the Iowa Taxicab Co. It will handle the Pierce-Arrow line.

W. G. Huffman of Mason City, Ia., has entered the garage and automobile livery trade in Charles City, in the same state; he has leased a building for five years.

Ernest Tonjes, of Brooklyn, N. Y., is preparing to build a one-story garage, 35 x 50 feet, at 56th street and 14th avenue; it will represent an expenditure of $4,500.

Neil Olsen, of Manitowoc, Wis., has taken over the Ford agency for that town. Frank Planski, who formerly had the agency, has relinquished it because of ill health.

Gorst & King are about to open a garage in North Bend, Ore. They have leased for five years the building which formerly was used by the North Bend Furniture Co.

Swanson Bros., of Clay Center, Neb., have purchased the Bahr Bros. Garage in Hastings, in the same state; they have the Maxwell agency for Western Nebraska.

J. R. Harris of Bloomington, Ill., has purchased the Normal (Ill.) Garage of E. C. Trott; Harris, at the same time, sold his interests in the Bloomington Garage.

Joseph Smithson, formery of Olean, N. Y., has entered the garage field in Detroit, Mich. He has opened up on Jefferson avenue under the style Smithson & Aleying.

Permission has been granted to Thomas Scoble to build a two-story brick garage at 32-36 West 12th street, San Francisco, Cal. The application named the cost as $6,000.

The Guarantee Motors Co., of Des Moines, Ia., just has moved into a new garage at 408-10-12 West 12th street; Abbott-Detroit cars and Chase trucks are handled.

Jackson Auto Sales Co. is the style of a new business in Peoria, Ill. The organizers are Charles Hines of that city, J. H. Sheehan and A. Murphy, both of Dunlap, in the same state.

Harry Burton of Chino, Cal., has sold his interests in the Burton & Crabb Garage; the firm style hereafter will be Crabb & Johnson. Burton, however, will continue as Krit dealer.

C. E. Miller, of Cordele, Ga., has purchased the garage business of Dr. A. B. McQueen in Tarbon Springs, Fla. Miller for some time has operated a machine shop in Cordele.

Fred J. Fitzgerald and R. G. McLaughlin have opened an automobile livery business in Chicago at 35th street and Michigan avenue; the initial equipment consists of ten cars and cabs.

F. O. Bowen and H. L. Matthews have bought C. L. Omohundro's interest in the Omohundro Auto Co., in Little Rock, Ark. The style hereafter will be Bowen & Matthews Auto Co.

The John J. Radel Co., undertakers, in Cincinnati, O., are entering the garage field; a two-story reinforced concrete garage is being erected for them at 652 State avenue. It will cost $25,000.

Olsen & Juergens Co. is the style of a new selling organization in Chicago; Lauth-Juergens trucks will be stocked. A service department has been established at 905 West North avenue.

A. Riley Crittenden, of Howell, Mich., plans to inaugurate an automobile transportation between that town and Fenton, in the same State; he will open up in the spring with 12 buses.

Charles J. Moody just has opened a garage at 56-58 River street, Elgin, Ill. He formerly operated a garage across the street from this location. The equipment includes a machine shop.

Carl B. and Lyman Spitzer are about to erect a one-story garage, 85x100 feet, in Toledo, O., on 31st street, near Madison; the plans call for an expenditure of $12,860.

Under the style of Price Hill Auto & Garage Co., John J. Radel has established a new business in Cincinnati, O. Radel also conducts a livery and undertaking business in various parts of the city.

Merritt Osborne, a dealer in St. Paul, Minn., has leased the Seymour Bently Garage at 468 Selby avenue and will remodel it as an electric service station; he handles Whites and Detroit electrics.

The Belt Garage of Fredonia, Kan., has been leased by Roy Gillett and Joseph Belt; the former owner, P. P. Belt, will devote his time to the sale of new cars in a salesroom adjoining the garage.

O. S. Johnson and Henry Rohde, of Bryan, Tex., have purchased the Imperial Garage from H. A. Saunders; this garage and one heretofore operated by Johnson and Rohde, will be consolidated.

The Clark-Summers Auto Co., which formerly did business in a Nebraska town, has entered the trade in Sioux Falls, S. D., at 228-30 North Main avenue; Cartercar, Metz and Lambert cars will be stocked.

Wesley Cock, who heretofore has operated a garage at 119 South Main street, Mitchell, S. D., has purchased an interest in the Dakota Auto Machine Shop, at 219 West 1st street; he will remove his Main street business to the new location.

J. C. Ebzine has leased for five years a two-story garage, salesroom and repair shop, 55 x 180 feet, which is to be erected in Marshalltown, Ia., by Mrs. E. V. Wixcel, of Chicago. The cost will be $12,000.

Kenneth Ellis, formerly a bank teller, W. R. Simpkin, formerly of Chicago, and M. L. Thompson, formerly of Vermillion, S. D., have organized an agency in Sioux City, Ia. They will handle Haynes cars.

C. B. Wyckoff, a member of the trade in East Orange, N. J., has organized the Ford Sales Agency of the Oranges, which has located at 490 East Main street; in addition to Ford cars, Overland and Cutting cars will be stocked.

Indianapolis, Ind., is soon to be possessed

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of a new building which will contain room for four selling agencies; Mrs. Laura B. Elder will erect it at Capitol avenue and Vermont street at a cost of $37,000. The site is 135 x 95 feet.

The Neustadt Auto Suppy Co., which for many years has been engaged in the accessory business in St. Louis, Mo., finally has "taken on" automobiles. It has secured the Marion representation for the eastern half of Missouri and southern Illinois.

Henry E. Riker & Co., a new entry into the field in Cleveland, O., has been made Ohio distributer for the Stewart Motor Corporation; a service station will be maintained on Euclid avenue. Riker formerly was general auditor for the Firestone Tire & Rubber Co.

Crowe Automobile Co. is the style under which L. E. Crowe, formerly of Portland, Ore., has opened a business in Los Angeles, Cal., at 1228 South Flower street; Crowe, who handled the Marion line in Portland for five years, will act as distributer for that line in Southern California.

The Auburn Garage & Auto Co. has been formed in Fort Wayne, Ind., wth a capitalization of $20,000 to take over the Auburn Garage, located on West Washington street; the company will continue to handle the Auburn line. The officers are: President, Fred Eckart; vice-president, Adolph Schultz; secretary, Ray McAdams; manager, Louis Watson.

The Campbell-Collins Co. has been organized in San Jose, Cal., by E. E. Campbell and Hugh Collins and will distribute accessories and automobile supplies over a considerable territory; the location is 241 South 1st street. C. E. Smith, a former Fisk tire man, and R. H. McIntosh, who has been in the trade in that State for a number of years, are connected with the business.

Robert C. Cornelius and Herman F. Hohly are about to enter the trade in Toledo, O., under the style Cornelius-Hohly Auto Co. They will handle the Imperial line at 1011 Jefferson avenue. Cornelius, for eight years, has been connected with the Eckhart Carriage Co., maker of Auburn cars; Hohly formerly was a druggist in Toledo but for seven years past has been in the employ of the Toledo Rubber Co.

To handle Maxwell cars in St. Louis, Mo., and adjacent territory, the Maxwell Motor Sales Co. has been formed in that city. The officers are: President, B. R. Ford; vice-president, Charles E. Darrow; treasurer, John F. Fillo. The new company has located at 304-306 North 12th street, previously occupied by the United Motor St. Louis Co., which has removed to 1215 Chestnut street, where it will conduct a purely wholesale business.

TWO HALLS REQUIRED FOR ATLANTA AUTOMOBILE SHOW

Twenty-five Dealers Display Forty-two Makes of Cars in Brightly Lighted Buildings—Exhibitors and Exhibits.

That electric lights and a building suitably large to house the affair as a unit, are not necessary for the production of a ninteresting and withal successful motor car exhibit, amply is being demonstrated at Atlanta, Ga., at the second annual show of the Atlanta Automobile & Accessory Dealers' Association, which opened on Saturday evening last, 16th inst., and which is to have a seven days' run.

But provision for electric illumination not having been made by the constructors of the Auditorium-Armory and of Taft Hall, which houses the overflow from the larger building, the "blaze of glory" nevertheless is there, light from the myriad incandescent gas lamps with which the chandeliers are provided, and from the globular lights which top the columns which serve to separate the various booths, supplying the needful glow. And were other means of making the buildings brighter necessary, they are amply supplied by the liberal use of light draperies, in pink and white, emblematic of the Atlanta Automobile Club, which serve to cover both ceiling and walls, that is, all of the walls save that portion which supports a huge scene done in oil by a local artist and which depicts a pass through a sylvan dell. Smilax and bay and flowers are freely used in the decoration of the booths of the exhibitors.

The show boasts of 42 different makes of pleasure and commercial cars, which are shown by 25 dealers; while accessory row is filled to overflowing with the varied wares of some 13 exhibitors. Although very much that is radical scarcely could be expected, just a touch of individuality is lent to the show by the appearance of the Corbitt car, which very rarely is seen north of the Mason and Dixon line and which is shown by the Sigma Engineering Co. The car is the product of the Corbitt Automobile Co., of Henderson, N. C., and is built along conventional lines. Interest is added to the display of accessories, too, by the appearance of the Seaton Spring Wheel Co.'s resilient wheel and the Regan motor, both of which are native products. The motor, which is the invention of Ralph Ragan, is said to function on the four-cycle principle, although valves either of the poppet or sliding sleeve variety are entirely lacking.

Among the exhibitors of motor vehicles are: Ford Motor Co., Ford; R. C. H. Corporation, R. C. H. and Hupp-Yeats electric; Firestone-Columbus Southern Co., Firestone-Columbus and Columbus electric; H. B. Odell, Packard, Regal and Rauch & Lang electric; Michigan Georgia Motor Car Co., Michigan; International Harvester Co., International; Southern Dorris Co., Dorris; F. B. Stearns Co., Stearns; Buick Motor Car Co., Buick; American Motors Co., American and Marion; Johnson Motor Car Co., Stevens-Duryea and Chase commercial; Fulton Auto Supply Co., Marmon, Hudson and Peerless; Studebaker Corporation, Studebaker; Locomobile Co. of America, Locomobile; L. S. Crane, Pope-Hartford; Sigma Engineering Co., Lozier, Haynes, Corbitt and Standard electric; Overland Motor Car Co., Overland; Oakland Motor Co., Oakland; Cole Motor Co. of Georgia, Cole and Federal and Alco trucks; Mitchell Motor Co. of Atlanta, Mitchell; John M. Smith, Pierce-Arrow, Chalmers; Atlanta Auto Sales Co., National, Henderson and Flanders electric; Velie Motor Vehicle Co., Velie; Premier Sales Co., Premier and Baker electric; Steinhauer & Wight, Cadillac.

Accessories are shown by Reed Oil Co., Wayne Oil Tank and Pump Co., Alexander-Seewald Co., Seaton Spring Wheel Co., Ralph Ragan, Frederick W. Brown, Charles E. Miller, Whitman Auto Sales Co., R. J. Slear, Elyea-Austell Co., Motor Supplies Co., Johnson-Gewinner Co., Atlanta Top and Trimming Co.

Minor Business Troubles.

Creditors have filed a petition in bankruptcy against the F. K. B. Co., of 1010-12 14th street, northwest, Washington, D. C. The concern dealt in automobile supplies.

The Urwick Motor Car Co., Brook street and Broadway, Louisville, Ky., is in process of liquidation; settlement is voluntary on the part of the stockholders. The capitalization is $15,000 The company handled Marmon and Baker electric cars.

The Westfield (Mass.) Motor Truck Co., manufacturer of motor trucks, has filed a petition in bankruptcy; there are about 150 unsecured creditors. The liabilities amount to $20,617, of which $57 is for taxes, $270 for wages, $900 is preferred, $7,519 is unsecured, $11,371 is for notes and $10,500 is for accommodation paper. Assets are $4,079.

Following a disagreement among the stockholders, the Dayton (O.) Automobile Co. has been placed in the hands of a receiver; the petitioners were T. J. Weakley, the vice-president, and other stockholders. William Miller, the bookkeeper, was named receiver and it was announced that business would be continued pending the dissolution of the concern and the sale of its assets.

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LID PUT ON SUNDAY RACING BY HOT SPRINGS CHURCHMEN

It is Lifted by Waiving Admission Fees, but "Passing Hat" Nets Little—Sloan's Troupe Entertains Arkansas.

As a revenue producer, the racemeet that was run at Hot Springs, Ark., on Sunday last, 17th inst., in connection with the State Fair, with the A. J. Sloan troupe as the headliners, was not a very gorgeous or glittering success. Not that the crowd was lacking or the purse strings bound tight, but interference was offered by a religious association which would not brook Sunday racing, and which was backed up by Governor Donaghey and General Green of the State Militia, who not only helped to voice the protest against the contest but threatened interference provided an admission fee was charged. Consequently and necessarily that formality was waived. Some slight recompense for the large expenditure resulted from a "passing the hat" procedure, but the donations received were somewhat meagre.

William Endicott (Case) made the best showing of the day, and took three of the competitive numbers on the program and finished second to Nikrent (Case) in the free-for-all handicap; he also made the best time in the single mile trials at 57 seconds. His victories included a three-mile and a five-mile match race with Louis Disbrow (Case) and Joe Nikrent (Case), respectively, and a five-mile contest for cars with displacements of under 451 inches. A ten-mile amateur event went to H. C. Alexander (Studebaker), who completed the distance in 13:05⅗. Nikrent, with a five seconds handicap over Endicott, won the five-mile free-for-all handicap in 5:30⅖. A two-mile exhibition, driven by Louis Disbrow in the Simplex, completed the program. The summary:

One mile, time trials—William Endicott (Case), time, 0:57; Joe Nikrent (Case), time, 0:61.

Ten miles, match race for amateur drivers—Won by H. C. Alexander (Studebaker 20); second, A. C. Gibbs (Ford). Time, 13:05⅗.

Five miles, for cars with displacements of under 451 inches—Won by William Endicott (Case); second, Joe Nikrent (Case). Time, 3:25.

Two miles, time trial—Louis Disbrow (Simplex). Time, 1:53.

Five miles, match race—William Endirott (Case); second, Joe Nikrent (Case). Time, 5:24⅕.

Three miles, match race—Won by William Endicott (Case); second, Louis Disbrow (Case). Time, 3:32.

Five miles, free-for-all handicap — Won by Joe Nikrent (Case), 5 seconds; second, William Endicott (Case), scratch; third, Alexander (Studebaker), 40 seconds. Time, 5:30⅖.

Law Grows Out of Test of Horns.

As a result of a test by the Police Department, the city of Los Angeles has just enacted an ordinance directed against the use of the bulb horn as an automobile warning signal. The test was conducted secretly and, so far as is known, was the first of its kind ever made. Members of the traffic squad went up and down the various streets where the parking of automobiles is permitted and blew the bulb horns attached to some 400 cars. Of this number but two were found which gave what they termed an adequate warning — one that could be heard 50 feet ahead. The others emitted so slight a sound that it could scarcely be heard at all. In every case it was impossible to obtain anything but an inaudible wheeze when the bulb was grasped quickly, thus demonstrating the uselessness of the bulb horn as an emergency.

The test was instigated for the purpose of gaining first hand information as to the cause of automobile accidents. It was shown, for instance, that of the number of these resulting from the failure to hear horns, 77 per cent. occurred at the intersections of streets where the noise of traffic is such as to make an efficient signal absolutely necessary.

The new ordinance requires the use of a signal capable of producing an "abrupt note, sufficiently loud to serve as an adequate warning"—that is, sufficiently loud to be heard under all conditions of traffic. Provision has also been made for the elimination of unnecessary noise by prohibiting the use of such a signal except in its true function—as a warning of danger.

Five Months in Jail for "Joy-Rider."

The ever-present individual who seeks recreation by purloining a car and enjoying himself therein to the detriment of the vehicle and at the cost of the owner, received somewhat of a setback in Los Angeles last week when Louis Hyer, a chauffeur, received a sentence of 150 days in the city prison. Hyer formerly was employed as a chauffeur by Major E. W. Jones and was found guilty of taking the car without permission the night of November 9 and wrecking it in the course of his escapade. The case was of unusual interest in that it was prosecuted under the direction and at the expense of the Automobile Club of Southern California.

OLDFIELD MANAGES MEET BUT EARL COOPER STARS

Veteran Driver's Troupe Appears in San Jose and Californian Scores Heavily—Oldfield Takes What's Left.

Although Barney Oldfield, piloting a front-wheel drive Christie, made the best time of the day during the mile trials—47⅗ seconds—Earl Cooper was the real star at the six-event meet which was run on the mile track at San Jose, Cal., Tuesday, November 12th, under Oldfield's management. Driving a Stutz, Cooper took the two major competitive numbers on the program, a five-mile free-for-all, which he completed in 4:43½, and a similar event which went for 25 miles and was won in 23:54⅖. The other competitive event went to Oldfield, who crossed the tape in 4:34¼. Gaston Maurice and Fred Melaun also won places, although neither appeared among the winners. Melaun took three thirds, while Maurice was second in two time trials. The summary:

Five miles, for cars with displacements of under 451 inches—Won by Barney Oldfield (Benz); second, Earl Cooper (Stutz); third, Fred Melaun (Cino). Time, 4:43¼.

One mile, time trials — Barney Oldfield (Christie), time, 0:47⅗; Gaston Maurice (Renault), time, 1:02⅛.

Five miles, free-for-all—Won by Earl Cooper (Stutz); second, Oldfield (Benz); third, F. Melaun (Cino). Time, 4:43½.

Two miles, time trials—Barney Oldleld (Christie), time, 1:37; Gaston Maurice (Renault), time, 2·03.

One mile, time trial—Earl Cooper (Stutz), time, 0:54.

25 miles, free-for-all — Won by Earl Cooper (Stutz); second, Barney Oldfield (Benz); third, Melaun (Cino). Time, 23:54⅖.

Prison Inmates Build Motor Truck.

Those automobile factories the annual output of which is at all limited generally do not lay much stress upon their building capacity, but there is one establishment the output of which is the minimum and the factory is proud of its accomplishment; this is Sing Sing prison, New York State's chief "hostelry." The convicts have constructed a complete motor truck, which is believed to be the first motor vehicle built within prison walls. Having built it, the prison authorities are determined to sell it and have offered the vehicle to Street Cleaning Commissioner Edwards of New York City for $5,000. He will inspect the truck at the penitentiary before saying "Aye."

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1,018,179. Link for Cross-Chains of Anti-Skid Devices. Frank Averill Fox, Brooklyn, N. Y. Filed Dec. 6, 1911. Serial No. 664,-218.

1. A link for cross chains of anti-skid devices comprising a body portion having a recess in its back or bottom face, a tongue extending from one end of the body portion having its end portion adapted to fit the recess in the body portion and having opposite recesses formed in its end portion near but not extending to its end, and oppositely arranged lugs on the body portion adapted to be turned down into and to fit the recesses in the end portion of the tongue.

1,018,185. Tire Case for Automobiles. Lewis Grimm, Pittsburgh, Pa. Filed Oct. 12, 1910. Serial No. 586,734.

1. A tire case comprising a receptacle in the form of an annulus, including a stationary and a hinged section, one of said sections seated in and overlapped by the other section when the receptacle is closed, means for maintaining the sections closed, a segment-shaped shoe secured to the lower portion of the stationary section and having its inner portion off-set, a segment-shaped shoe fixed to the lower portion of the hinged section and pivotally connected to the off-set portion of the other shoe, and means for connecting that shoe provided with the off-set portion to a support.

1,018,206. Tire Chain and Guard. Ole J. Mikelson, Ferryville, Wis. Filed Nov. 6, 1911. Serial No. 658,770.

1. In combination with a tire, the guard or chain consisting of the series of gripping members, links flexibly connecting the members, and means for connecting the meeting ends of the chain and securing the chain upon the tire, said means consisting of a pair of links having hooks at one end to engage one set of end members, a loop connected to said links to engage the tire rim, and a pair of levers fulcrumed to the other end of said links and having open recesses to engage pins on the other member of the chain at the meeting end.

1,018,219. Variable Speed Power Transmission Mechanism. Willard Irving Twombly, New York, N. Y., assignor, by mesne assignments, to Twombly Motors Company, New York, N. Y., a Corporation of New York. Filed Mar. 12, 1910. Serial No. 548,-776.

1. In a variable speed power transmission mechanism, the combination of a drive shaft; a roller pinion fixed thereto, said pinion also constituting one member of a clutch; a driven shaft coaxial with the drive shaft; a roller pinion mounted on the driven shaft to rotate therewith and having sliding movement thereon, said pinion also constituting one member of a clutch; an intermediate gear the axis of which is transverse to the axes of the drive and driven shafts, comprising a wheel having a plurality of concentric circles of pins; means operative to throw and lock the said wheel into mesh with the pinions on the drive and driven shafts, and to permit it to drop out of mesh with the pinions; and means to throw and lock the pinion on the driven shaft into and out of mesh with either circles of pins on the intermediate wheel to transmit different forward and reverse velocities to the driven shaft, or to throw the clutch portion of said pinion into engagement with the clutch portion of the drive-shaft pinion for direct drive, and simultaneously with the throwing of the clutch portions of the pinions into engagement operating the means to lock the intermediate wheel out of mesh with the pinions.

1,018,236. Implement for Automobile Engines. John J. Cooper, Providence, R. I. Filed Sept. 12, 1911. Serial No. 648,980.

1. In a portable device or tool of the general character described, the combination of a manually controlled operating lever member having one end bifurcated and adapted, when in use, to engage with and compress the spring of a self-closing valve, a suitable fulcrum screw adjustably engageable with said forked or bifurcated end of the lever, a nut mounted to move longitudinally on said screw, and a bent hook-shaped rod having one end thereof hinged to said nut and the other or free end adapted to engage the valve of an engine when the valve-bonnet or cap is removed.

1,018,250. Vehicle Spring. Michael M. McIntyre, Cleveland, Ohio, assignor to The Perfection Spring Company, Cleveland, Ohio, a Corporation of Ohio. Filed Aug. 28, 1909. Serial No. 515,117.

1. The combination, with a multiple leaf spring having leaves provided each with a central projection within the lateral edges thereof and a complementary recess, whereby said leaves may be centered with the projection of one leaf nesting within the recess of an adjacent leaf, of a spring seat having a surface conforming to the deflected portion of the adjacent spring leaf, and clips securing said spring to the seat.

1,018,259. Spring Wheel. William T. Murray, Baldwin, Kan. Filed June 6, 1911. Serial No. 631,624.

1. A device of the class described comprising an interior wheel member and a rim member spaced from the periphery of the wheel, a plurality of guide spokes carried by the rim, retaining portions carried by the wheel receiving the spokes for longitudinal and lateral sliding movement, resilient devices carried by the wheel, and divergent flexible connections between the resilient devices and the rim.

1,018,262. Carburetter for Internal Combustion Engines. Henry Andrews Neal, Richmond, England. Filed Mar. 7, 1910. Serial No. 547,797.

1. In a carburetter for an internal combustion engine, the combination of a mixing chamber having an air inlet channel and a mixture outlet, a carburetting chamber communicating with the mixing chamber, a valve adapted to vary the dimension of the opening between the carburetting and mixing chambers, a second valve for varying the extent of opening of the air inlet channel to the mixing chamber, and a suction-operated throttle controlling the outlet from the mixing chamber.

1,018,276. Fuel Injector. Edward M. Smith, Fall River, Mass. Filed July 20, 1909. Serial No. 508,668.

The combination of a cylinder having a piston therein, an air passage communicating with the cylinder and with a source of air supply, a fuel injector comprising a body having a threaded plug at its inner end adapted to be screwed into a wall of the air passage, said body being provided with a needle valve passage extending longitudinally therethrough, a valve in the passage, a fuel passage communicating with the valve passage, a cup on the inner end of said screw plug into which the valve discharges, and a deflector comprising a vertical wall spaced from and extending across the outer side of said cup, an inclined wall curved inwardly and downwardly from the upper edge of said vertical wall and overhanging said cup, said deflector being provided with end portions secured to the inner end of said screw plug.

1,018,292. Wheel Tire. Herman Leo Biener, New York, N. Y., assignor, by direct and mesne assignments, to Auto Sectional Leather Tire Company, New York, N. Y., a Corporation of New York. Filed July 14, 1910. Serial No. 571,945.

1. A wheel tire made in sections arranged around the rim of the wheel, each section comprising a rim plate, a tread plate, a coil spring interposed between the said rim plate and the said tread plate at the middle thereof, a flexible inelastic connection between the rim and tread plates at the center of the plates, said connection extending through the spring, flexible inelastic connections between the ends of the said rim plate and tread plate, and means carried by the rim plate for detachably securing the section to the rim of a wheel.

1,018,303. Metallic Vehicle Wheel. Hedley John Donahoe, Chicago, Ill., assignor of one-half to Theodore C. Tiedebohl, Chicago, Ill. Filed Oct. 9, 1911. Serial No. 653,-559.

A vehicle wheel formed entirely of one piece of cast metal, comprising, a fixed rim or tread, a double series of spokes, and a central hub, one series of said spokes being curved in one direction and the other series of spokes being curved in the opposite direction, said spokes intersecting one another at a multiplicity of points, said spokes slightly overlapping each other at the hub and then gradually merging into each other and finally all terminating at the rim in the same plane, whereby said spokes are integrally connected to each other at each intersecting point, there being at the angles of the intersecting spokes punctured lugs constructed to receive removable attachments, as described.

1,018,307. Resilient Wheel. John Wood Enright, New Orleans, La. Filed Nov. 26, 1910. Serial No. 594,284.

1. In a resilient wheel, an outer and an inner rim, pairs of lugs projecting from each of said rims, spaced-apart elliptical springs disposed between said rims and between the lugs of each pair, said springs comprising upper and lower leaves, a pin connection hinging said leaves together at their outer ends, whereby said pin may be withdrawn to disconnect said leaves.

1,018,330. Speed Recorder. Aubry H. Martin, Short Hills, N. Y., assignor to Recording Speedometer Company, Newark, N. J., a Corporation of New Jersey. Filed Nov. 7, 1911. Serial No. 658,965.

1. A speed recorder for recording the

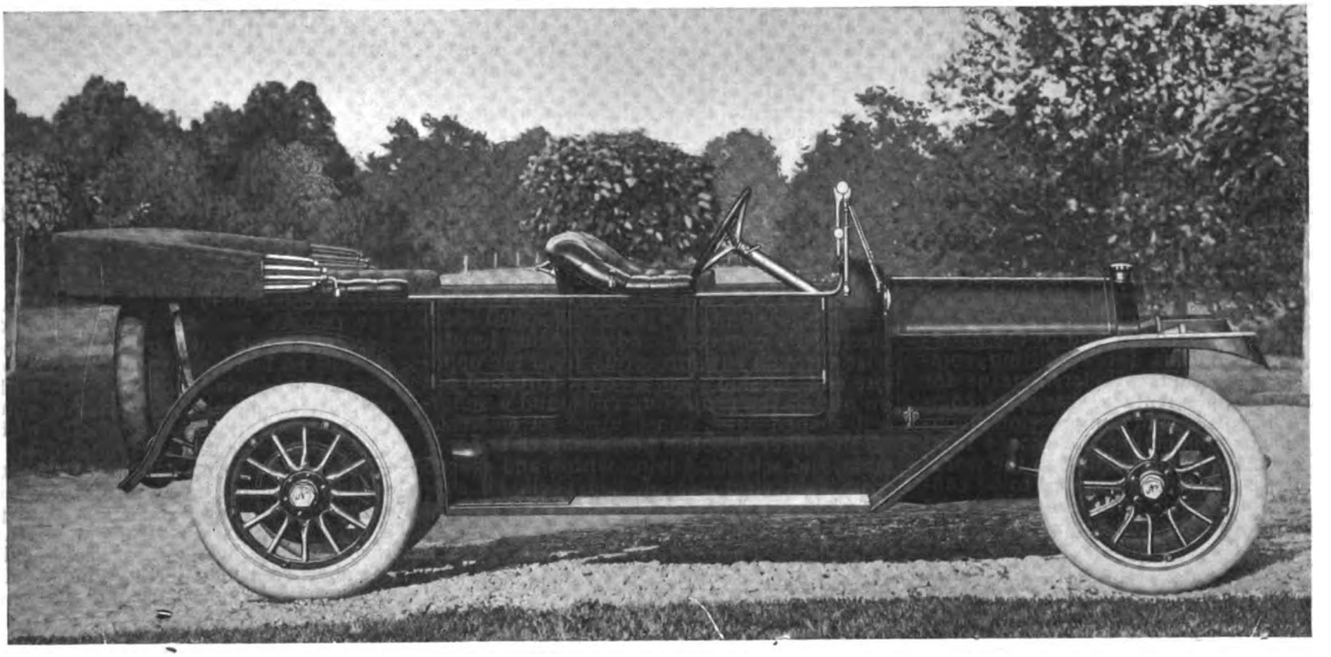
(Continued on page 38.)

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National

International Champion



Five Passenger Touring Car, One of Five Models, Improved Series V

Announcement of National Improved Series V

Do not compare the NATIONAL with any car except those costing $5000 or more. You have studied the 1913 announcements of other high-grade cars, and now without wasting words on superlatives we invite your candid reasoning—we can prove the NATIONAL offers you in Quality, Utility, Luxury, Reputation and Intrinsic Worth as much or more than any $5000 car for

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Long Stroke (4¾ × 6), flexible and noiseless Motor, with enclosed valves.
Left Side drive.
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Gray & Davis Electric Starter.
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Bosch double dual Magneto.
Multiple jet Carbureter.
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Full heavy nickel Trimmings.
Electric Horn.
Adequate baggage carrying Compartment concealed in body but easily accessible.
Powerful and reliable Brakes.
Spacious interior.
Tire Pump, integral part of the motor.
128-inch wheel base.
Adjustable ventilating and rain vision Wind Shield.
Hoffecker Speedometer.
Tire Carrier in rear.
Silk Mohair Top, Cover and Curtains.
Full floating Rear Axle.
Resilient springs; ¾ elliptic in rear; semi-elliptic in front.
Large gasoline pressure-feed Tank with Gauge in rear.
Robe rail, foot rest, and foot mat in running board.
Plain, continuous, enclosed Metal Guards.
Easy riding qualities, unexcelled.
Oiling System, demonstrated to be perfect.

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(Continued from page 36.)

movements of a member driven automatically from a vehicle, including a device for feeding tape in predetermined amounts past said member and a clock-work for operating the tape-feeding device, said tape-feeding device consisting of a storage device for the tape, a roll adapted as it revolves to wind the tape thereon, a rotary table intermediate of the storage device and the winding roll, a disk having a circumference equal to the predetermined amount of tape to be fed and provided on its periphery with a surface adapted to grip the tape, and means for maintaining said roll and the tape thereon, in operative relation with said disk; substantially as described.

1,018,372. Internal Combustion Engine of the Tandem Type. Thomas Rigby, Dumfries, Scotland. Filed Oct. 16, 1911. Serial No. 654,943.

1. In an internal combustion engine comprising working cylinders in tandem, a piston in each cylinder, a rigid connection between the pistons, a compression chamber being formed at the inner end of the outermost cylinder, means for admitting combustible fluid to said cylinders, means for admitting a supplementary charge of combustible fluid to the said compression chamber, means for conducting the charge from the said chamber in alternation to the working cylinders, and means adapted to be controlled from a governor for controlling the admission of the supplementary charge to the engine.

1,018,383. Sparking Plug. George S. Walker, Boston, Mass., assignor of one-half to Edward J. Chadbourne, Wakefield, Mass. Filed Dec. 13, 1910. Serial No. 597,158.

1. A sparking-plug comprising, in combination, an electrical connected metal tubular shell, exteriorly screw-threaded and at its opposite end-portions open and of different internal diameters joined by a circular running shoulder, and at its larger open end internally screw-threaded and at its smaller open end having a circular radial flange projecting inwardly, constituting an electrode, a gland exteriorly screw-threaded and screwing into said screw-threaded end of said shell, and at one end having an internal circular running flange or shoulder and at its opposite and open end having a removable sleeve closely fitting and terminating therewithin and projecting therefrom, an insulated cylindrical and tubular plug having an external running collar lying between said internal flange of, and the end of said sleeve within said gland, and at one end-portion extending into and along and spaced from the smaller tubular end-portion of said shell and said sleeve of the gland and at its opposite end-portion projecting from said gland, a cylindrical metal stem electrically connected and extending lengthwise through and projecting from the opposite ends of said plug, a screw-threaded nut on one of the projecting ends, and a spherical shaped head, constituting an electrode on the other opposite projecting end of said stem, and said head lying within and spaced from said electrode of said shell, all substantially as described, and for the several purpose sspecified.

1,018,428. Pneumatic Wheel Hub. Fred J. Koch., East St. Louis, Ill. Filed Mar. 19, 1910. Serial No. 550,460.

In a vehicle wheel, an axle, a bushing thereon, a pair of castings provided with annular bearing rims non-rotatably mounted on opposite ends of the bushings, a spoke receiving member, the inner portion thereof fitting between the castings and the outer portion projecting there-beyond, pneumatic tires mounted in the bearing rims of the castings, bearing rings attached to opposite sides of the spoke receiving member and engaging the tread portion of said tires, said rings extending entirely around the wheel and a bearing ring in the spoke receiving member for the inner ends of the spokes.

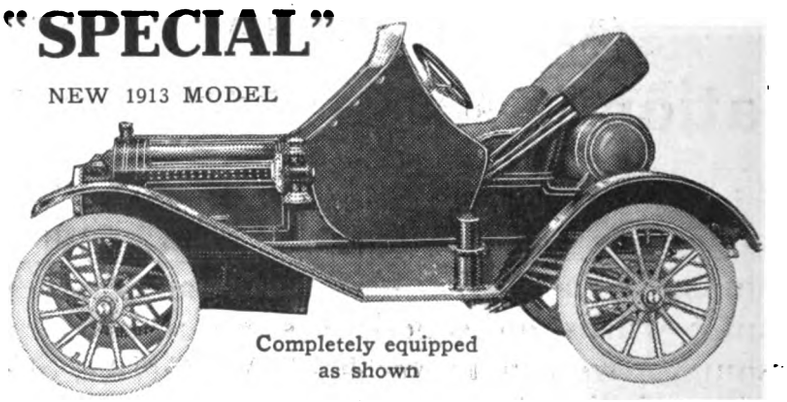
Reissues.

13,370. Speedometer. Louis A. Greenleaf, Dorchester, Mass. Filed Jan. 4, 1912. Serial No. 669,987. Original No. 1,011,051, dated Dec. 5, 1911. Serial No. 566,034.

1. A speedometer, comprising an inclosure, a continuous hollow cylindrical member therein, means for holding said member in spaced apart relation to the walls thereof to leave an open annular space, air current producing means wholly within said cylindrical member, a driving connection thereto, and means also wholly within said cylindrical member responsive to an air current and having connected thereto a device to indicate the force thereof, said parts being constructed and arranged to produce a closed circulation of air in one direction through the interior of said cylindrical member, returning in the opposite direction through said upobstructed open annular space.

METZ "SPECIAL"

NEW 1913 MODEL



Completely equipped as shown

They Have Said All Along:

"It Can't Be Done"

But HERE IT IS

The Best Roadster Car in the World

$395.00

IN presenting to the public the METZ "SPECIAL" at this phenomenally low price we wish particularly to emphasize the fact that this innovation has not been brought about by slashing car quality or depreciating value, but purely as the result of scientific, economical manufacturing, in conjunction with what is probably the lowest possible percentage of overhead cost.

The question has been repeatedly asked: "Who will be the FIRST to give the people of this country a Strong, Reliable, Sane, REALLY LOW-PRICED CAR?"

And today the METZ COMPANY, in placing on the market the METZ "SPECIAL" at $395.00, answers this question so effectively and so emphatically that it is bound to make an indellible impression upon the automobile industry of the entire world.

The METZ "SPECIAL" is a strictly high-grade, guaranteed car. 22½ horse power, four-cylinder motor, water cooled, high tension ignition system, with Bosch magneto. Equipped with standard artillery wheels, best quality clincher tires, extension top, wind shield, five lamps, gas generator, horn, pump, tools, etc. Makes from five to fifty miles per hour on high gear, will climb hills as fast as ANY stock car made, and is the MOST ECONOMICAL CAR on the market to operate.

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DIRECTIONS

For Starting a Gasoline Engine In Cold Weather

One Way

Crank a while, then tickle carburetter. Crank some more. Open petcock in all cylinders and drop a little gasoline into each. Tickle carburetter and spin engine violently for five minutes.

Next, drain off anti-freeze mixture and fill tank with boiling water, then crank again. If engine starts, replace anti-freeze. If not, wrap a flannel cloth tightly around carburetter, saturate with hot water and crank a while, always remembering that if you crank long enough friction will warm up your engine.

Should engine remain stubborn, waste saturated with gasoline and plugged into air intake may help. Now try cranking. Do it again. If too tired to keep at it, probably some by-stander will volunteer—let him go to it—it will rest you and afford you some amusement.

If engine hasn't started, examine your switch—perhaps it wasn't turned on. Crank some more—stand and look at machine—cuss a little—that may help.

Now if it won't start, 'phone a garage and take a trolley to business.

Another Way

The
Simplest and Best

Use an

Electric Self Cranker

Operated from an

GLBA

Storage Battery

It will eliminate your cold weather cranking troubles, crank your engine at any time, any place, instantly and surely, just by a push of a button.

Use the Class A GLBA with an Electric Lighting Generator
Use the Class B GLBA with an Electric Self-Starter

Write us for full information.

WILLARD STORAGE BATTERY CO., Cleveland, Ohio

New York Branch, 136 W. 52nd St. **Chicago Branch, 436 So. Dearborn St.**
Detroit Branch, 1191 Woodward Ave.

Depots in All Principal Cities in the United States, Canada and Mexico.

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"The Horn that's Made for the Discriminating"

TUTO HORN

THE TWO TONE HORN

Results Vs. Argument.

THE TUTO horn has won out. Its service-giving features have withstood every conceivable form of adverse criticism which has been advanced by makers of other types of warning devices.

¶ This fact alone should demonstrate to the motor car manufacturer and to the individual user, that the TUTO horn is best for standard equipment where the bulb horn is to be displaced.

¶ The TUTO is the only warning signal which has the dual service of a low note for regular purposes and the loud emergency note, both notes being operated from one button in a natural and non-confusing manner.

¶ These features are exclusive Dean property, protected by our issued patents and pending applications.

¶ Then the TUTO horn is so perfectly designed and carefully made that it can be guaranteed indefinitely, and will give active service during the life of the best car.

¶ We know that automobile owners transfer TUTO horns to their new cars when the TUTO is not included in the regular equipment furnished by the manufacturer.

¶ Every user of the TUTO horn becomes an enthusiastic advocate and driving the car is made extremely easy with complete safety assured.

¶ Mere arguments can never outweigh the practical and beneficial results which are obtained by having a TUTO horn on the car.



TUTO Horn, $25.00

The Dean Electric Co.

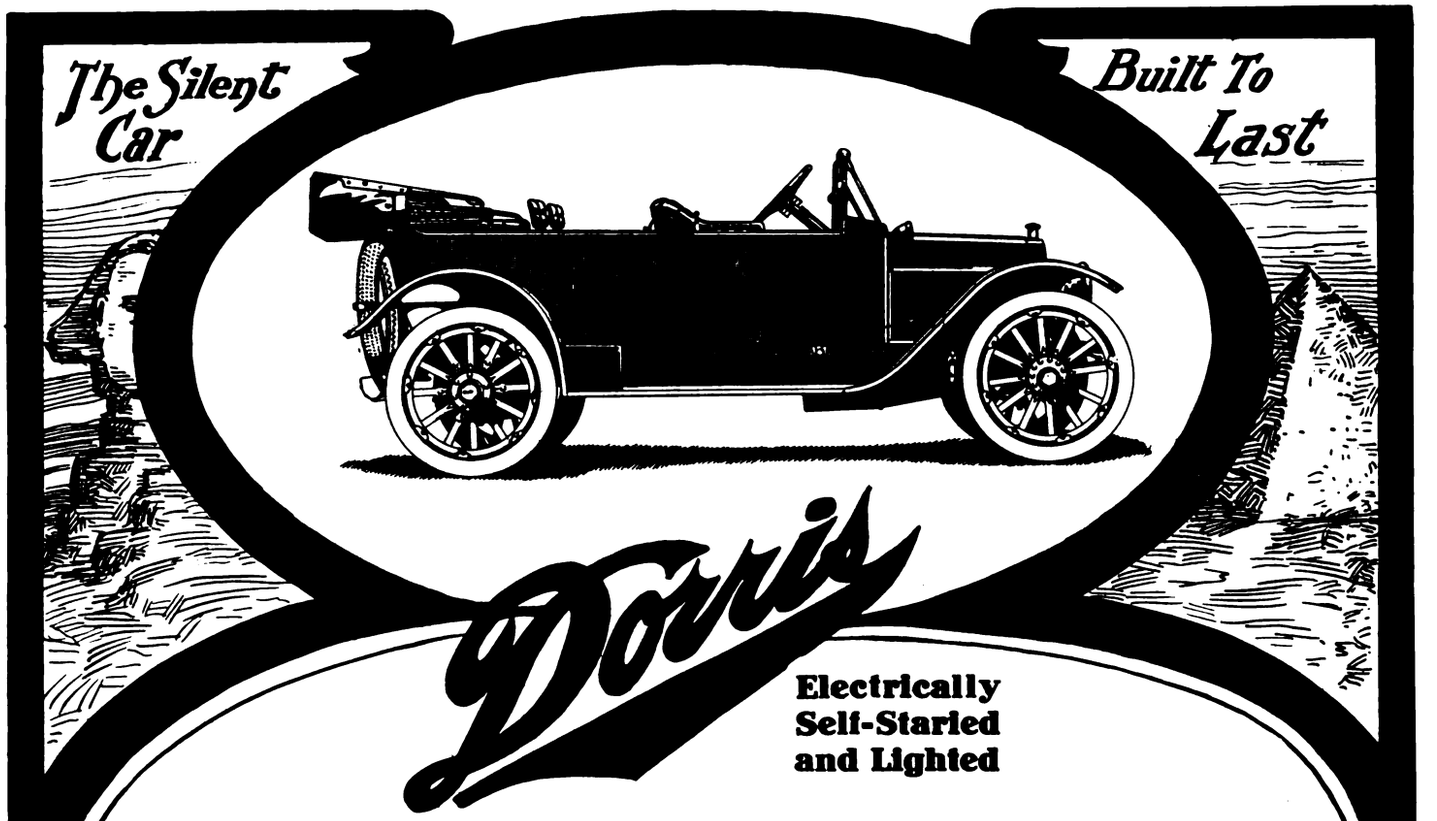
260 Taylor Avenue, Elyria, Ohio

"Look for Dean where Quality's seen"



TUTO-ETTE $17.50

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A Permanent Business Connection Because the Car Is Built to Last

The Dorris is as good a car as money can make. After eight years of constant use, the first automobiles we put on the road are still hard at it, day after day. Every car we have made has been a good car; has made friends. Every Dorris dealer in our hitherto confined territory has made a success and a big one. We built our business as we build our cars—to last—and our reputation is precious to us.

We believe that there is one high grade automobile dealer in every town, who will appreciate this frank talk and will be willing to be shown what we have to offer. We want to show that dealer just two things:

(1) That his business can never be permanent unless he handles a car that is itself a permanent thing, both in construction and in the firm behind it.

(2) That the Dorris car is such a car and offers the safest, soundest proposition ever put up to an honest man by an honest manufacturer.

If you, the reader of this, are a dealer such as we have tried to appeal to in this little talk—able to handle a high grade car in a high grade way—write us immediately for further details.

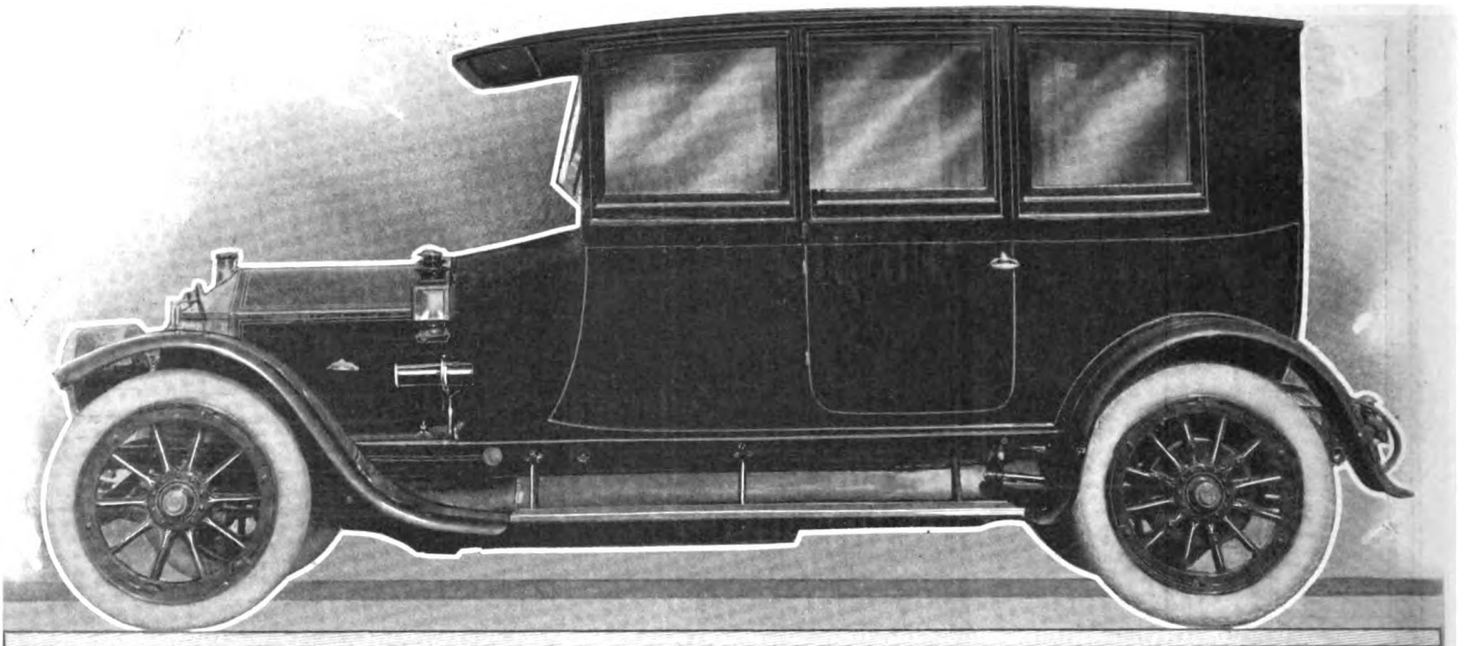
We manufacture a complete line of both pleasure and commercial cars:

PLEASURE CARS	COMMERCIAL CARS
$2500 to $3600	1500 Lb. Delivery Wagon $2100
Electrically Self-started and Lighted	2 Ton Truck $2500

Specifications and complete description furnished on request

DORRIS MOTOR CAR CO., Sarah and Laclede Aves., St. Louis, Mo., U. S. A.

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WE WANT MORE DEALERS TO SELL

METALLURGIQUE

THE ARISTOCRAT OF EUROPE

The Car of Royalty

For Exclusive Americans

The Metallurgique propaganda is growing faster than we had anticipated—prejudice against the foreign car, just because it *is* foreign is disappearing, and our dealers are finding out that real European supremacy in matters of design, materials and lines is appreciated —and sought after.

Now, Mr. Dealer, we will be perfectly frank: The Metallurgique is the rich man's car. It is an automobile for the classes—for men of wealth and ability to discern the real difference in cash value between this swagger car of service and the very best American products.

It's just a question of steel versus steel—design versus design and appearance versus appearance. If you want strong, telling arguments on this controversy, write and we will put information into your possession that will help you sell the Metallurgique.

THE METALLURGIQUE CO.

1934 Broadway **NEW YORK**

European Quality

European Design

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At The Point of PERFECTION

and the last work of inventive genius exemplified in this common sense economizer and engine saver.

It is an acknowledged fact that no carburetor, however perfect, can get full power and service out of a given quantity of gasoline.

Your customers know this—you know it—and here we show the only real way to get maximum power from fuel, regardless of the efficiency of the carburetor in this particular.

The National Compound Mixer and Primer, a small, compact, little instrument, located on the dash, admits air to the manifold, breaking up every drop of gasoline before it enters the engine.

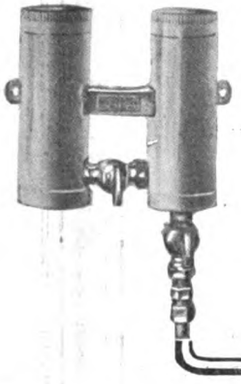
With it perfect mixture and perfect combustion is assured—

Saving From 10 Per Cent. to 40 Per Cent. Gasoline

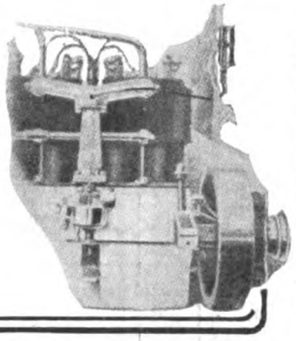
Increasing Power From 10 Per Cent. to 40 Per Cent.

Doing Away with Carbon

The Primer will instantly prime all cylinders with a rich mixture—NOT with pure gasoline—and can always be used to clean the engine in a very easy way.



THE NATIONAL COMPOUND MIXER & PRIMER



EVERY DEALER

will find a ready sale for the National Compound Mixer and Primer—it is a money saving, power conserving convenience and the price will put it within reach of every car owner in every locality.

It's only a question of your getting this agency FIRST, while the field is virgin and sales and liberal commissions big.

You, Mr. Dealer, can get in on the ground floor if you will respond to the advertisement.

NOW—will you do it?

National Manufacturing Co., Kalamazoo, Mich.

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1913 Motorcycle Shows

and what the Bicycling World and Motorcycle Review will do in connection with them.

New York Show

will be held in connection with the Automobile Board of Trade Annual Show in Grand Central Palace, under auspices of the Motorcycle Manufacturers' Association

January 11-18

We will publish two big issues in connection with this show.

New York Forecast Number
January 7

New York Report Number
January 14

The Chicago Show

will be held at the Manufacturers' Exhibition Bldg., 1319 Michigan Avenue, and will be conducted under the auspices of the Motorcycle Manufacturers' Association

February 3-8

Two special issues will be published descriptive of this show.

Chicago Forecast Number
February 4

Chicago Report Number
February 11

We are ready now to book reservations of space for all or any of the four above described numbers of **THE BICYCLING WORLD AND MOTORCYCLE REVIEW,** and our service department is now preparing copy and sketches for our advertisers' use in these big issues. Each of the Show Numbers will have extra circulation without increase in price of space and our regular advertisers may use extra space on their contracts at minimum rates. This is a splendid opportunity of which the entire trade should take advantage.

Copy and cuts can be handled one week in advance of each publication date, but we recommend reservation now and an early preparation of copy. Can we help you with this copy? And how much space can we reserve?

BICYCLING WORLD AND MOTORCYCLE REVIEW
1600 Broadway **New York**

New York *and* Chicago

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TIMKEN
AXLES & BEARINGS

Getting Maximum Power from Engine to Wheels

It isn't only the size or rated horse-power of your engine—
It's how *much* of that power gets to the *wheels*.
Right here is where good gears count—and count mighty strong.

Gears that are good enough to meet Timken ideals of efficiency can't be completely made by any gear-cutting machine—even the finest.

They have to be *ground* to perfect accuracy. This increases expense, but Timken does it because it makes for quietness and efficiency.

What's more—we couldn't find a gear-grinding machine or method in existence that would remove *all* the little inaccuracies left by even the finest cutters.

So we invented a process—designed and built a special machine.

Two other important facts—

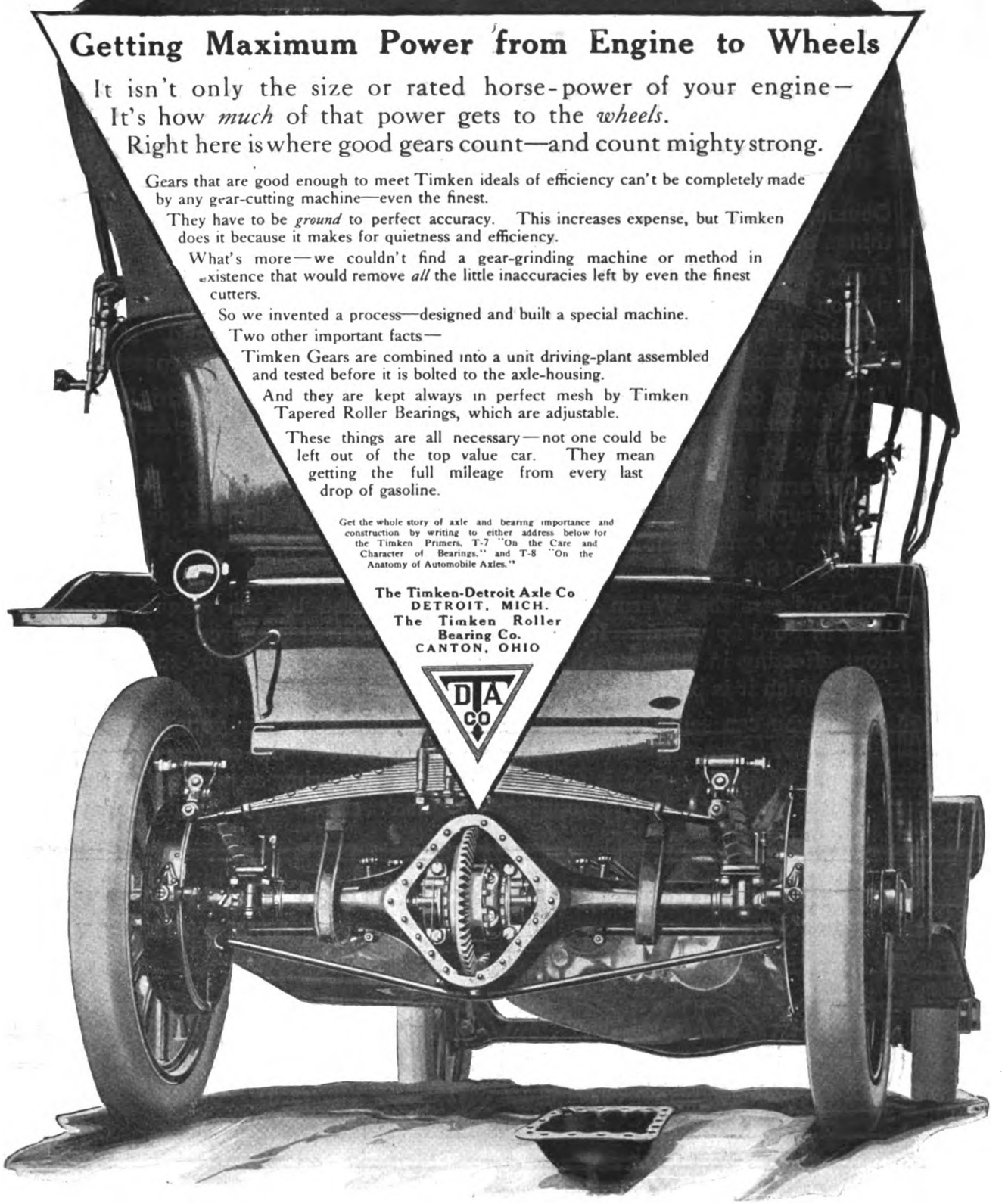
Timken Gears are combined into a unit driving-plant assembled and tested before it is bolted to the axle-housing.

And they are kept always in perfect mesh by Timken Tapered Roller Bearings, which are adjustable.

These things are all necessary—not one could be left out of the top value car. They mean getting the full mileage from every last drop of gasoline.

Get the whole story of axle and bearing importance and construction by writing to either address below for the Timken Primers, T-7 "On the Care and Character of Bearings," and T-8 "On the Anatomy of Automobile Axles."

The Timken-Detroit Axle Co
DETROIT, MICH.
The Timken Roller Bearing Co.
CANTON, OHIO



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Can You Imagine a More Practical Necessity on an Automobile Than This Warm Hand Wheel?

¶ Obviously your answer is, "No." "No," because in the very nature of things one insists upon his body being warm during cold weather.

¶ Then, obviously again, if the Warm Hand Wheel is a most practical necessity on every automobile, the question of selling them is solved inherently. If an article is a necessity it does not require the creating of a demand. If the question of demand is solved the problem of selling is the simplest possible.

¶ Then why don't you get in line and stock up with these Warm Hand Wheels immediately? Our argument is solid and correct. We've done our work. Now it's up to you.

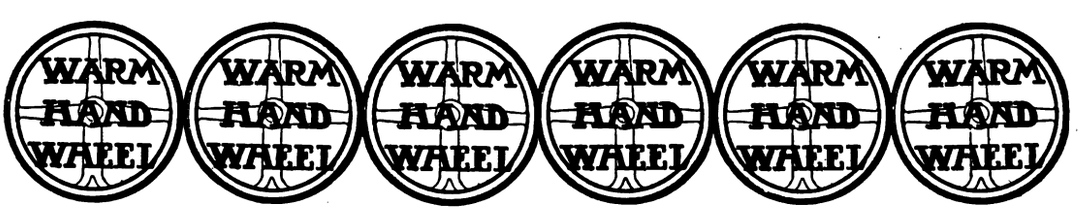
¶ The Warm Hand Wheel is a device or steering wheel heated by the electricity supplied either by a storage battery or electric lighting or starting outfit. It can be put on any car with the greatest of ease and at the slight cost of $15 retail.

¶ On Ford cars this Warm Hand Wheel is operated by the magneto inbuilt in Ford fly wheels. It operates perfectly with this source of current without affecting in any way the magneto in the performance of the functions for which it is built.

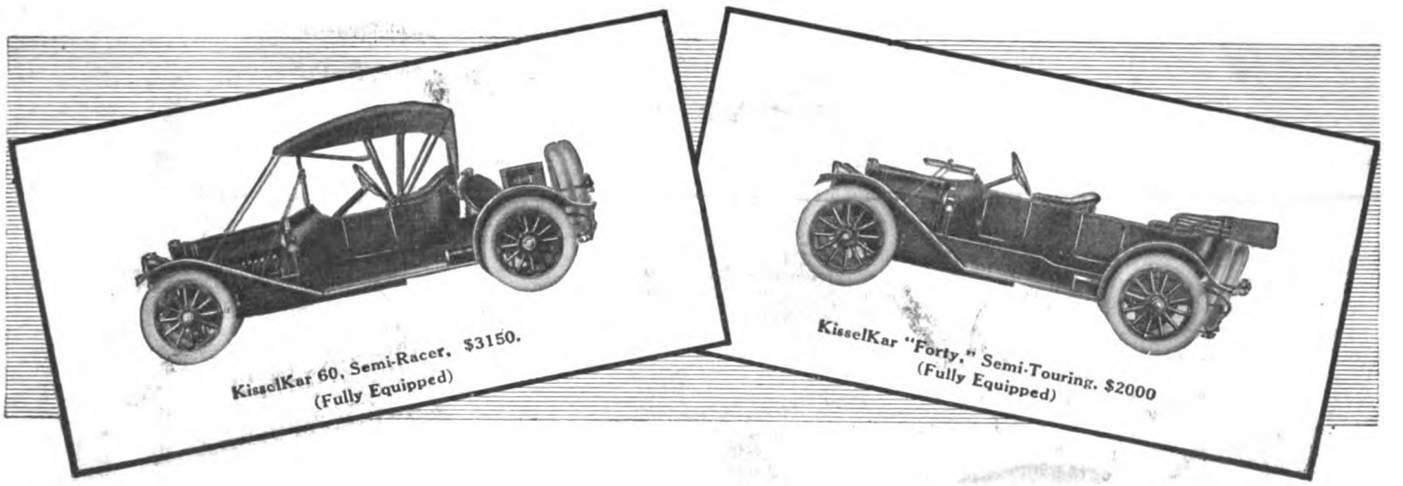
¶ Really you can sell a raft of these Warm Hand Wheels in your territory right now. Remember they are necessary in most of the country for six months out of twelve—that is during both fall and spring as well as in the hard winter weather. Maybe your territory isn't closed yet. Write today and find out.

Warm Hand Steering Wheel Company

527 Fifth Avenue **NEW YORK CITY**



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Compare the KisselKar with any car at any price

The riding comfort of the KisselKar surpassed every previous idea of car comfort. The extra liberal wheelbase, big wheels, big tires, shock absorbers, and eleven inches of the most resilient upholstery ever put into an automobile completely eliminate road vibration—the unusual depth of seats permits a quarter-reclining position, making it needless for occupants to brace against side-sway or lurches of the car on rough roads. KisselKar comfort is unapproached—it is a KisselKar quality exclusively—and the proof is in the riding.

Any KisselKar agency will give you the fullest opportunity to demonstrate the road capabilities of the KisselKar—and you are welcome to compare it with any car at any price—such comparisons are advantageous to the KisselKar. Write for 1913 KisselKar catalog—it is a valuable aid in judging car values.

KISSELKAR

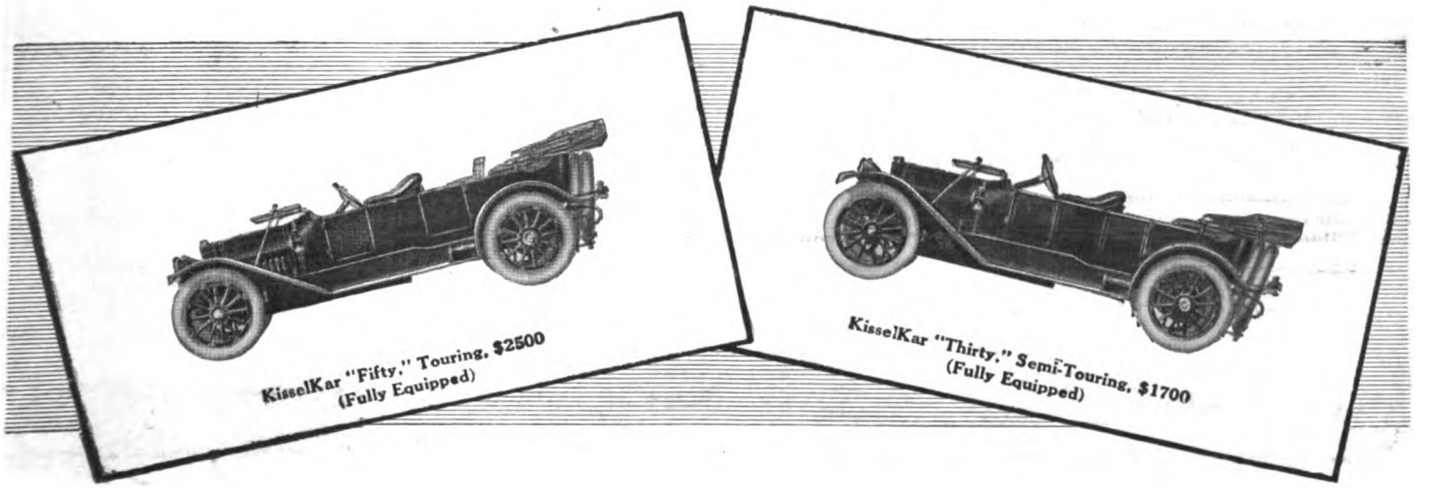
"Thirty" $1700 "Forty" $2000 "Fifty" $2500 60 H. P. "Six" $3150

Fully equipped, including electric starting and lighting system, top, windshield, speedometer, shock absorbers, demountable rims, etc.—everything belonging to a perfectly appointed car.

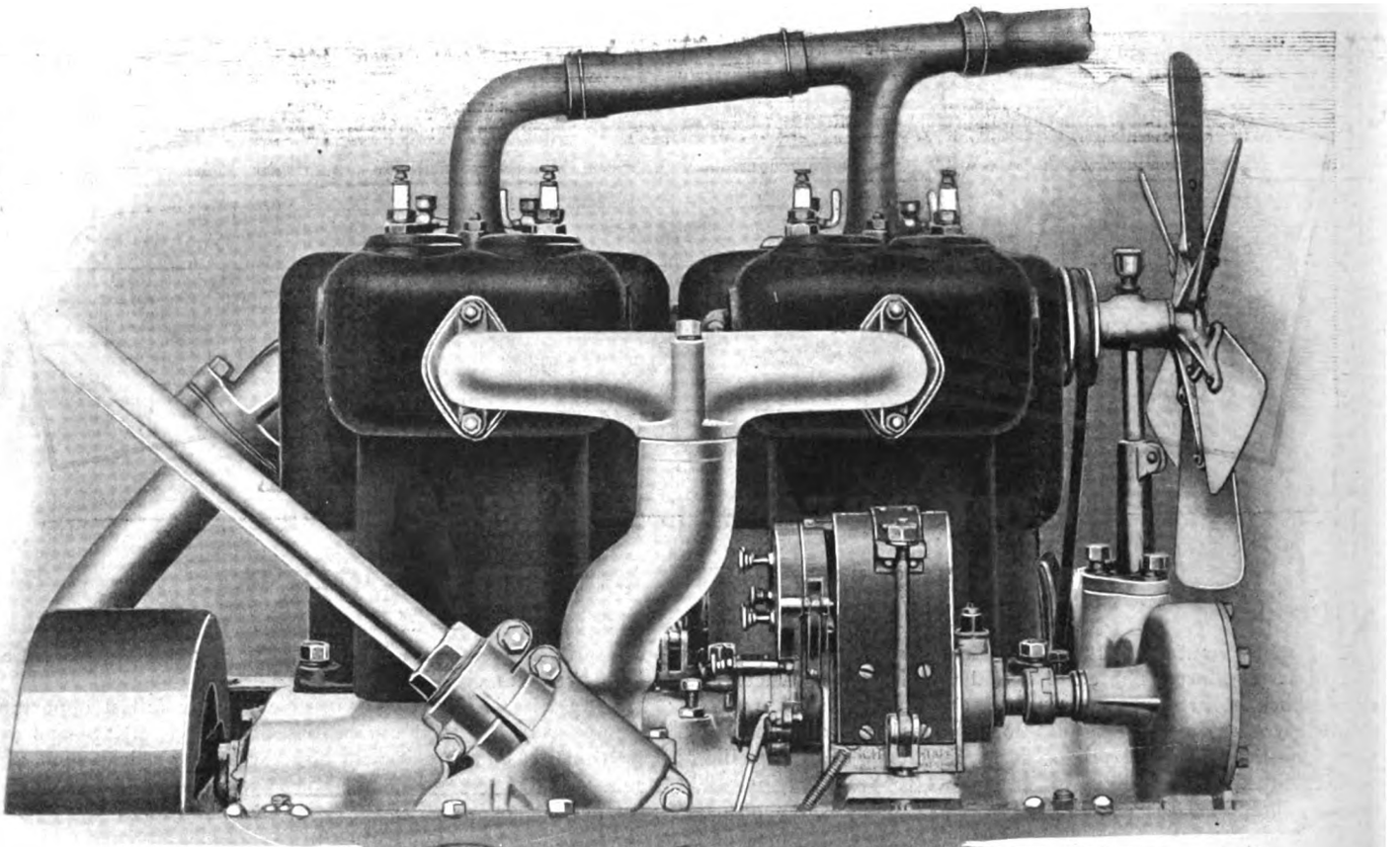
KISSEL MOTOR CAR COMPANY, 159 Kissel Avenue, Hartford, Wis.

BOSTON NEW YORK CHICAGO MILWAUKEE KANSAS CITY LOS ANGELES
MINNEAPOLIS ST. PAUL DALLAS

Philadelphia, Cleveland, Detroit, El Paso, San Antonio, New Orleans, Baltimore, Omaha, Butte, Denver, San Francisco, Seattle, Portland, Duluth, Buffalo, Pittsburgh, Hartford, Conn., New Haven, Albany, Troy, Montreal, Quebec, Toronto, Winnipeg, and 200 other principal points throughout America.



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1913 Pullman 1913

No operation in the Pullman factory is a hurried one. While the Pullman factory is thoroughly equipped with the most up to date labor saving devices, ample time is spent on every operation and in every test to insure positively the most certain and most dependable results. Every Pullman car must be up to the standard of excellence that has placed Pullman cars in their present enviable position. Pullman manufacturing policy is that of making all the cars right, that we can make, rather than to make all the cars we could rush through. That's one reason why we so frequently have been way oversold.

One very important point in Pullman motor construction is the fact that the bearings are all extremely large in diameter and narrow in width. This means a stiff and sturdy crankshaft. Also the crankshaft is remarkably accurate as to size. The bearing shape and sizes reduce the vibration in the crankshaft to the minimum, not only after the car is made and running, but during the machining of the crankshaft itself. Naturally this makes for a superior product.

In the assembly of the motor all Pullman bearings are hand scraped. Of course this takes more time but it produces a superior motor. In the machining operations all Pullman crankshafts must come to size even under the microscope. There is absolutely no variation allowed on the size of the pins.

The Pullman line is a complete one. Every model is built just as carefully as every other. The variation is in size and complement only. If you want a line for this year and the next and the next—a line that increases in value day by day—tell us to get in touch with you.

PULLMAN MOTOR CAR COMPANY, YORK, PA.

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Knox
MARTIN TRACTOR



Maximum Carrying Capacity
Minimum First Cost
Minimum Maintenance
Minimum Turning Radius

What It Is

Not a Theory But a Proven Success in a Year's Gruelling Work. Many in Successful Operation. 5 to 10 Ton Capacity. Full Details Explained in Tractor Catalog. Send Today.

A motor unit that may be attached to any heavy vehicle designed to be drawn by horses; the combination making a five-wheeled motor-drawn vehicle.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO EXCESSIVE COST OF RUBBER TIRES. Wagons have been doing good work for many years on steel tires and there is no reason why they will not continue to do so when drawn by the tractor; the heaviest part of the load is always carried on steel tires.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO EXCESSIVE VIBRATION ON STIFF SPRINGS. All working parts of the tractor are carried on springs as resilient as those of a pleasure car.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO SUDDEN STARTING OR STOPPING OF HEAVY LOADS. The cushioning of the shock between the engine and the load is one of the most important advantages gained, (fully explained in catalog).

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO NEGLECT ON ACCOUNT OF INACCESSIBILITY OF PARTS—all parts of the tractor being more accessible than on a touring car.

IT SAVES HEAVY MAINTENANCE CHARGES due to frame twist. The tractor accommodates itself to all road unevenness.

The single front wheel can be turned at 80 degrees angle, enabling the driver to back to any position or turn completely around in a narrow street.

Send for further information and prices

KNOX AUTOMOBILE COMPANY (Tractor Department) Springfield, Mass.

BRANCHES—New York, Chicago

AGENTS—The Knox Martin Tractor Is the Greatest Proposition in the Commercial Field Today. Fully Protected by Patents.

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An Active Journal Covering an Active Field

Things are happening every day in both motorcycling and bicycling and every week these happenings are accurately reported in the pages of this paper

THE OLDEST AND MOST INFLUENTIAL CYCLING JOURNAL IN THE WORLD

THE BICYCLING WORLD (FOUNDED 1877) and MOTOCYCLE REVIEW

Published Every Tuesday

10c. a copy $2.00 a year

Sample Copy Sent Free on Request

Bicycling World Company
1600 Broadway
New York City

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Clear Vision Brougham

Model 42, $3000
F. o. b., Detroit

Isn't Your Line Incomplete Without an Electric, Mr. Dealer?

THERE is a real business opportunity for the right dealer in every town of 10,000 or over in which the Detroit Electric is not now represented

In its present highly developed state the Detroit Electric, if properly handled by you, means increased business with comparatively little additional overhead expense. We would be glad to give you special information and practical assistance. We desire only permanent connections that will be mutually satisfactory.

Remember that the Detroit line is absolutely complete, including eight models in pleasure cars and a full line of electric trucks. All are made in our own factories and guaranteed by this company.

The new Detroit Electric Clear Vision Brougham, as announced in the October magazines and exhibited at our various branches, has met with the instant approval of the public. We have in the past introduced many notable improvements in the development of the electric automobile, but none has met with more approbation than the Clear Vision features of this car, which permit a clear view in all directions—in front, both sides and at the rear.

The seating arrangement of this car is not only unique, but logical for driving in congested traffic. All seats face forward. Note the central location of the forward seats, from one of which the car is driven; and yet there is plenty of room between the front and rear seats. The car has a well-balanced, pleasing appearance whether occupied by one or more persons.

We shall be pleased to hear from live dealers. Our 1913 catalog is now ready.

Anderson Electric Car Company

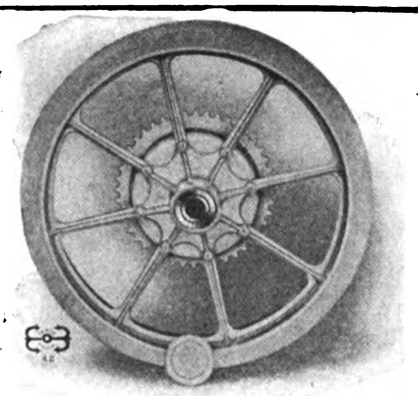
423 Clay Avenue, Detroit, U. S. A.

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Brooklyn
Buffalo
Cleveland

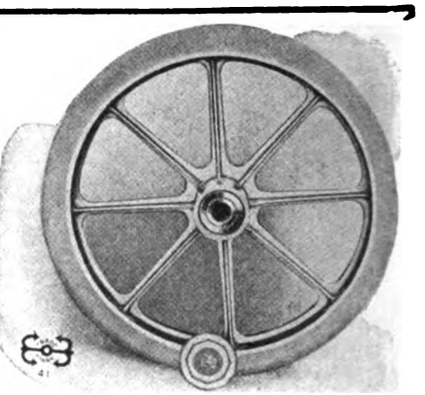
BRANCHES:
New York—Broadway at 80th Street
Chicago—2416 Michigan Avenue

Evanston
Kansas City
Minneapolis

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SHELDON STEEL WHEEL



"Guaranteed to Outlast a Score of Cars"

SHELDON Steel Wheels Lighter Than Wood

These wheels are one piece construction. The hub is bored to receive the bearings, of which you have several options. The rim is turned to size, saving the cost of S. A. E. Bands, which are unnecessary. There are no flange bolts to come loose—a defect in wood wheels often causing much trouble and annoyance.

The economic disposition of material makes SHELDON STEEL WHEELS counteract tremendous side pressures. Lighter than wood, SHELDON STEEL WHEELS permit quick acceleration, which means fuel economy. Light weight and the rapid heat radiating capacity of steel increases the life of tires 100 per cent. Does this saving increase the value of your car?

SHELDON STEEL WHEELS make a quality truck still better and build a reputation for such a truck that is bound to make more and more business for its manufacturer. Comparative cost considered, the difference will come back in tenfold measure.

This company is now prepared to make delivery of steel wheels for one ton trucks, other sizes to follow. This should appeal to truck manufacturers who have been subject to annoying delays incident to receipt of wood wheels. Were the steel product no more valuable from an engineering standpoint than the wooden wheels this one item of convenience should appeal. Get your axles and wheels from one source, save trouble and freight.

Manufacturers, engineers, and others can get additional information that is bound to turn them into customers.

SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

Detroit Branch:
1215 Woodward Avenue

Chicago Branch:
68 East 12th Street

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Get All You Can This Year in a "40"

This is a year of fierce competition in 40-horsepower cars.

There are 72 makers of Forties. For men are demanding in motor cars now reasonable power and room.

Scores of these makers try to outdo each other. This war of the "40's" has cut prices in two. And some "40's" today are the best-equipped, most luxurious cars on the market.

It is up to you buyers to get all you can out of this Forty fight.

What to Get

Get electric lights with dynamo. You are bound to want them, and they cost as an extra $125.

Get four forward speeds, like the costliest cars. Get oversize tires—4½ inches wide—for that means immense economy.

Get 14-inch Turkish cushions for comfort. Get wide, long springs. Get wide seats and long wheel base.

Get big brakes for safety. Get driving parts sufficient for a 60-h.p car.

Get hand-buffed leather upholstering, nickel trimmings, and a body finish of 22 coats.

These are points where makers skimp. Be sure you get them all.

Then get a price which underbids all others for the things you seek.

All for $1,585

In the Michigan "40" you get all these perfections for $1,585.

You get a car built by W. H. Cameron, who has built 100,000 successful cars.

You get a body designed by John A. Campbell, who has designed for kings.

You get a car in which, in four years, we have worked out 300 improvements.

Because of enormous production, and this model factory, you get a "40" which leads this whole class at $1,585.

Go make your comparisons. Watch each specification. Look out for the differences which cut down the value.

See if any car in the whole Forty class gives what the Michigan gives for the money. For this is a war, and with 72 rivals you can get amazing values.

Send this coupon for our catalog. It pictures every detail, and helps you make comparisons. It shows the various bodies. Send the coupon today, and we will tell you where to see this car.

Michigan "40"

$1,585

With All These Special Features:

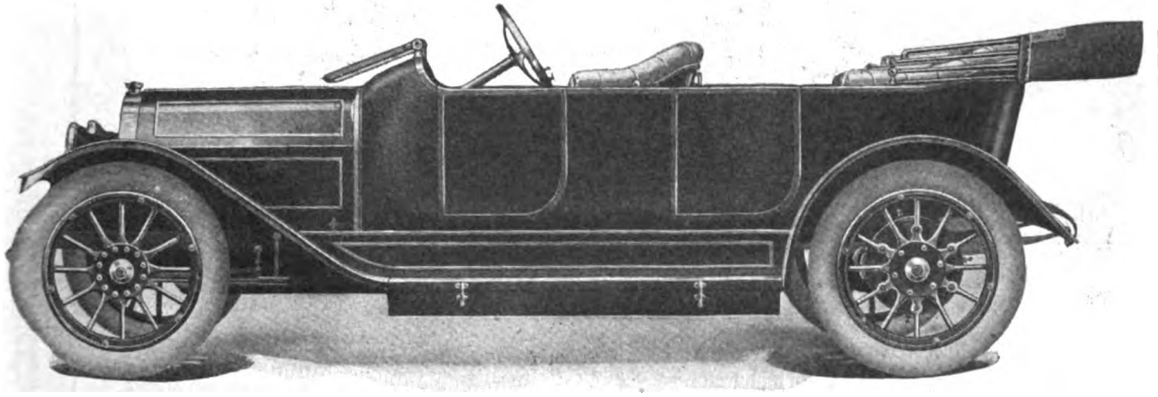
Four forward speeds, like all leading foreign cars.
Electric lights with dynamo.
Oversize tires—35 x 4½ in.
40 to 46 horsepower.
Wheel base, 118 inches.
Rear seat, 50 in. inside.
Turkish cushions, 14 inches deep.
Central control.
Left side drive.
Drive shaft sufficient for 60 horsepower.
Brakes — extra efficiency—drums 16 x 2¼ inches.
Springs, 2¼ in wide, 37 and 50 in. long.
Demountable rims.
Extra rim.
Steering post, clutch and brake pedals all adjustable to fit any driver.
Shortsville wheels.
Hand-buffed leather.
Best curled hair.
Body finish 22 coats.
Nickel mountings.
Electric headlights, very powerful, 12½ in. diameter.
Sidelights flush with dash.
Windshield built in.
Mohair top, side curtains and envelope.
Electric horn.
$50 Speedometer.
Foot rail—robe rail.
Rear tire irons.
Tool chest under the running boards, out of the way.
Over-capacity. Every driving part made sufficient for a 60-horsepower car.

Self-Starter

Either gas or electric, furnished at moderate extra price. We do not include it because men differ about the type they want.

Michigan Motor Car Company, Kalamazoo, Mich.

Owned by the Owners of the Michigan Buggy Company (119)



Mail this Coupon

Michigan Motor Car Co., Kalamazoo, Mich.

Mail me your 1913 Catalog.

.....

.....

.....

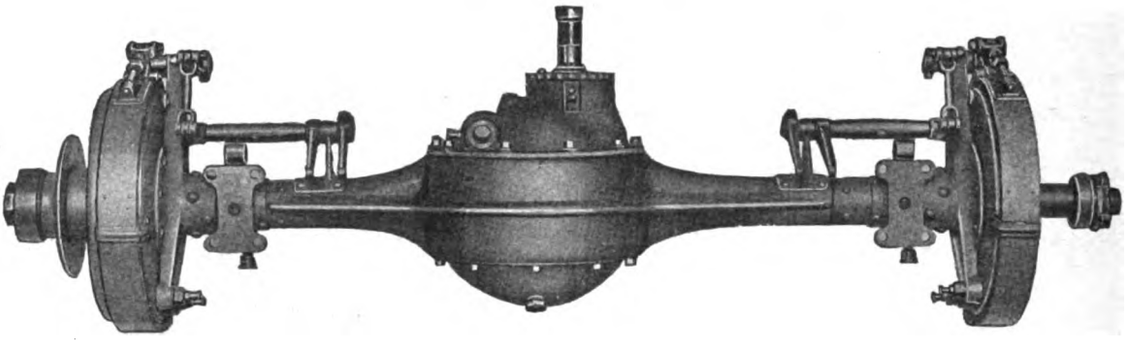
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American

American Axles

American

Insure Maximum Mileage from Your Car's Batteries



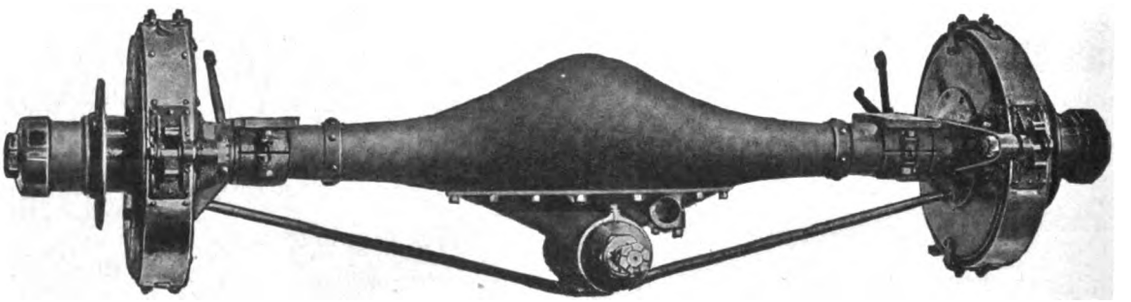
You cannot increase your battery charge, but you can make that charge carry you to its fullest extent if your car has *American Axles*.

The mileage question can only be judged fairly by including the axle problem.

If you do not know that there is an axle problem, you are ignoring the element upon which—more than any other—the general efficiency of your electric depends.

The solution of the axle problem is to be found in *American Axles*, which have the least friction because of their exclusive, patented features in combination with the perfection of their manufacture.

The *American Axles* line offers the option of Bevel driven gears—made first by us for any electric—or the Lanchester-Daimler Worm gear; the superb English type of gear to which we hold the sole American rights as axle manufacturers, through the Warner Gear Co., of Muncie, Ind.



THE AMERICAN BALL-BEARING CO.

Edgewater Park and L. S. & M. S. Ry. CLEVELAND, OHIO

American

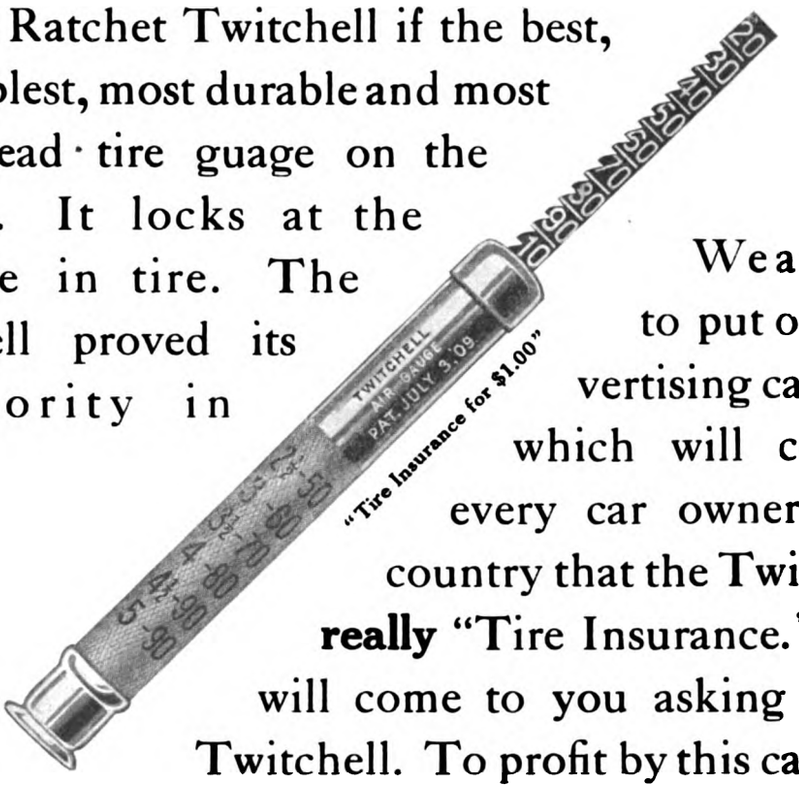
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Get in Line

to handle a big increased business on the

New Positive Lock Stop Twitchell Air Guage

THE Ratchet Twitchell if the best, simplest, most durable and most easily read tire guage on the market. It locks at the pressure in tire. The Twitchell proved its superiority in 1912.



We are going to put on an advertising campaign which will convince every car owner in the country that the Twitchell **is really** "Tire Insurance." They will come to you asking for the Twitchell. To profit by this campaign you must have the Twitchell in stock. Get in line today

Watch for Our Important Announcemennt to the Trade Next Month

THE TWITCHELL GAUGE COMPANY

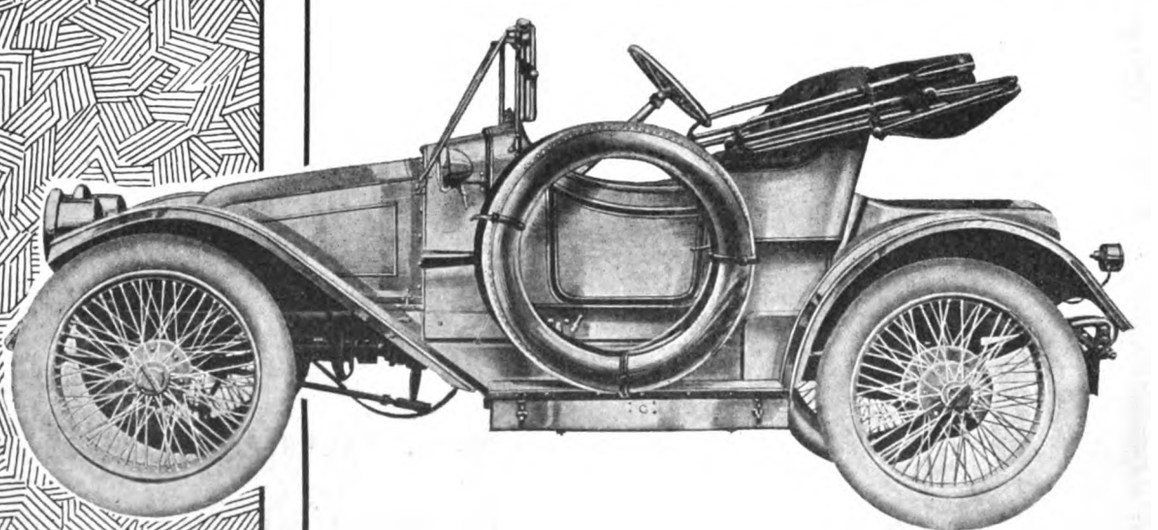
1202 Michigan Avenue **CHICAGO, ILL.**

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McCUE WIRE WHEELS

Remember our warning, Mr. Dealer—that it is merely a question of when you'll be selling cars equipped with wire wheels—for every day adds new converts to this greatest of all tire saving equipments. It's simply a question of whether you'll insist upon your cars being equipped with wire wheels immediately or whether you'll wait and be forced into it after your competitors have reaped the reward of progressiveness.

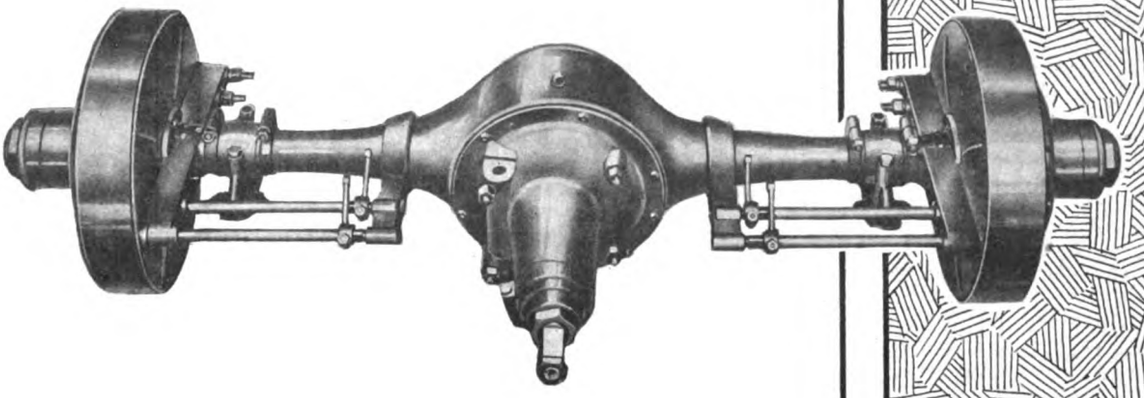
As in every other business there are some shortsighted automobile manufacturers who do not hear the call—and who need to be prodded to come to a full realization of the fact that they must adopt wire wheels. It is of these we are warning you, Mr. Dealer. Get after your manufacturer if he hasn't awakened yet. It's to your interest in every way to sell wire wheel equipped cars. Act at once.



Herewith is shown the first electric convert to wire wheels—the Model 29 Buffalo Electric—built primarily for the business and professional man who wants a speedy and powerful electric car. Wire wheels add both speed and power while they save tires and weight (consequently they increase the life of the batteries).

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McCue Wire Wheels are furnished with Q. D. rims—with the most practical and most efficient Q. D. rim ever invented. Not only is this rim adaptable to either clincher or straight side tires but it is so constructed that the tire does not come in contact with the spoke nipples.



McCue axles are not an absolute necessity to the use of wire wheels, but McCue axles plus McCue wire wheels form a most ideal manufacturing combination. McCue axles are the finest production known to the axle designing and making world. McCue axles must sell on this fact for they are never sold on price. No rear axle ever designed possesses more points of merit than the McCue rear axle, and the McCue front axle stands pre-eminently alone the admitted leader in the field. McCue axles are so made as to admit of the use of either wire or wooden wheels on the same spindle.

McCUE AXLES

THE McCUE COMPANY

Buffalo, New York

Send for "Mileage Plus"

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THE present demand for self-starting and lighting equipment has created a demand for an ignition system capable of producing a hot, dynamic spark independent of the engine speed.

This demand is being successfully met by

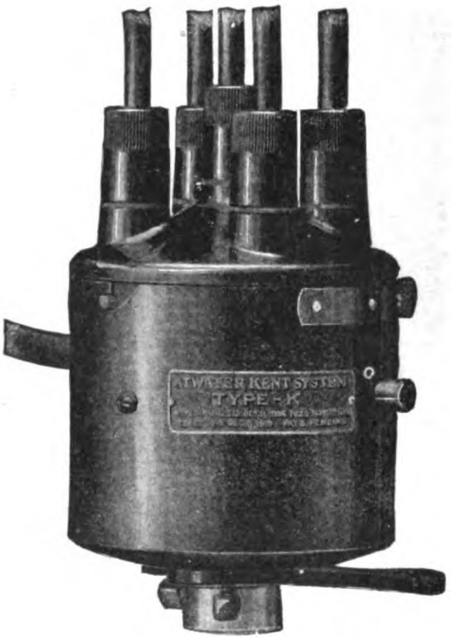
The Atwater Kent Ignition System

the starting button of which produces, not a few weak sparks, but a single heavy flame-like spark, thus insuring at all times the perfect ignition of any mixture that will burn.

Other salient features of the Atwater Kent System are the extreme simplicity of mechanism, only three moving parts, one contact, one adjustment and one non-vibrating coil.

While the Atwater Kent System is high in value and reputation, it is not high in price. In fact, it will cost less





than half as much as a good magneto and will give superior results at a much less cost of upkeep.

We can now furnish two types of the Atwater Kent System for use on cars as sole ignition in place of the magneto, in conjunction with lighting and starting equipment.

Type "F" without Automatic Spark Control.

Type "K" with Automatic Spark Control and insulated primary circuit.

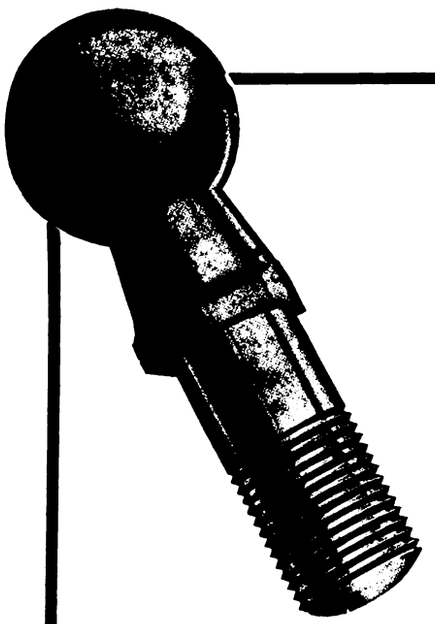
No matter what the requirements, the Atwater Kent System of Ignition affords ideal ignition.

Write today for detailed information and illustrated booklet "D."

ATWATER KENT MFG. WORKS

4930 Stenton Ave. Philadelphia, Pa.

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NAMCO Milled Parts Meet Exacting Demands

Automobile companies buying screw machine parts demand not only accurate work, but uniform smoothness of finish.

That NAMCO Product shows no tool marks, no flat spots on rounded surfaces, scarcely noticeable cut off burrs, is due to the fact that our equipment is exceptionally fit for particular screw machine work. Our operators, through long experience, know the high standard to be maintained in automobile work and make light the duty of your inspector.

Our estimate department has the results of thousands of pieces made in the past on which to base their quotation. Let us have your samples. They may be similar in design to parts we have made, and the price will be right.

When you send in your samples ask for the "Special Milled Product" booklet.

The National-Acme Manufacturing Co.
Automatic Screw Machines and Their Products
CLEVELAND, OHIO

"In Exchange for your empty tank, accept only a genuine Prest-O-Lite Tank, filled with genuine Prest-O-Lite Gas."

This is the message that is going to Prest-O-Lite users everywhere.

In it there is a hint for the wise dealer, as well.

You know that no imitator of the Prest-O-Lite Tank has ever successfully imitated Prest-O-Lite Service.

You also know that no imitator ever made good the large claim "more gas and better gas than Prest-O-Lite.

So does your customer.

Imitations are getting harder and harder to sell. There are now mighty few dealers trying it.

Most of those who yielded to the old but ever tempting claim "More Profits" have come back home.

To the dealer who is still trying to force imitations on people who won't have them, perhaps because he has money tied up in them, we can only say:

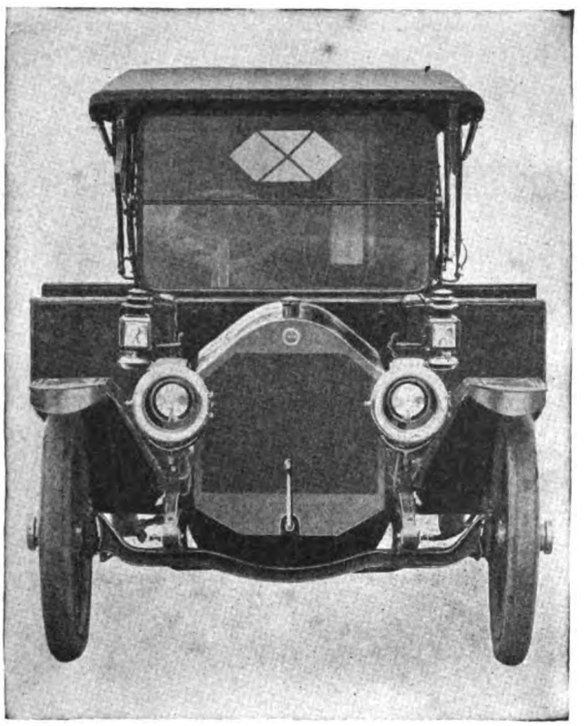
"The sooner you resume earning your good old Prest-O-Lite profit, the sooner you will make your income what it used to be."

The Prest-O-Lite Co. 287 E. South St. Indianapolis, Ind.

Branch offices and Service Stations in all principal cities.
Charging Plants in all parts of the country.
Extensive foreign service.

Exchange Agencies Everywhere

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EMPIRE

"The Little Aristocrat"

Completely Equipped $950

THE EMPIRE Five Passenger Touring Car has come into its own kingdom. It is winning so many loyal adherents everywhere that we have been compelled to establish a second factory.

"The Little Aristocrat" is not too large, yet magnificent in appearance, low in price, but soundly designed and built to endure and to serve efficiently at low maintenance costs.

Its surplus power allows it to *"make mole hills out of mountains,"* as an enthusiastic owner puts it.

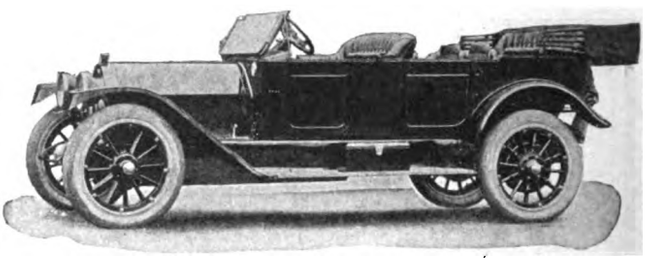
No description can give you an adequate conception of the EMPIRE. See it by all means. Inspect it minutely. Discover for yourself, that besides beauty and power it has luxurious comfort for five people. *Ride in it and let the EMPIRE talk to you in terms of pleasant sensation.*

Our new illustrated folder describes completely and in detail "The Little Aristocrat" EMPIRE Five Passenger Touring Car

Write for it.

Empire Automobile Co.
Indianapolis, U. S. A.

"Service and Silence"



Kline Kar Model 6-60, Touring, $3500

DEALERS

YOUR experience with other cars should tell you that it does not pay to handle a line that constantly worries the life out of you with complaints from the user, who has trouble with the machine. This user knows now that he is better off when he buys a car of quality in the first place, even though he must pay a little more for it, and he will soon begin to demand such a car of his dealer.

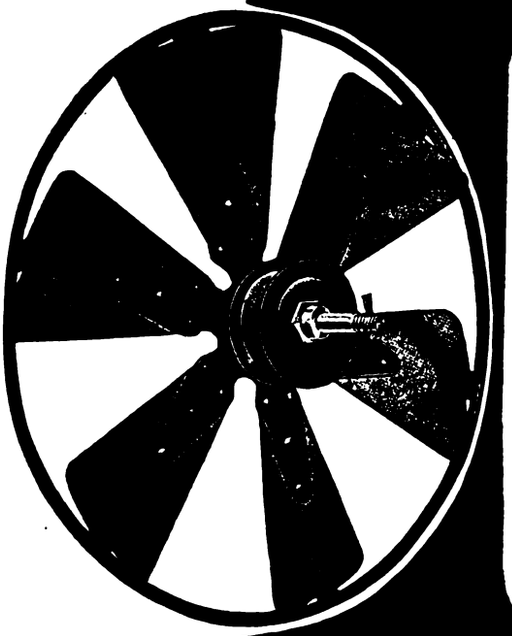
It is up to you to have the car in your line when he calls. The Kline Kar will answer all the requirements this prospect may impose and more.

Prices $1850 to $3500
(Fully Equipped)

Get Our Proposition

Kline Motor Car Corporation
YORK, PA. **RICHMOND, VA.**

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Patented

1913 Fans

Before considering your next season's requirements ask for results of tests recently conducted with Sparks-Withington One Piece Blade Radiator Fans. This information will be furnished gladly, and it may mean improvement to your cooling system.

Our Capacity 1,000 Fans Per Day

Get Catalog

The Sparks-Withington Co.
Jackson, Michigan and Walkerville, Canada





Kelly - Springfield Tire Company
20 Vesey St. New York

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Chicago
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St. Louis
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Boss Rubber Co. Denver, Colo.
Appel & Burwell Rubber & Tire Co. Dallas, Texas
Todd Rubber Company New Haven, Conn.
Bering Tire & Rubber Co. Houston, Texas
The Hearn Tire & Rubber Co. Columbus, O.

Kelly-Springfield
Automobile Tires

As a matter of fact, dependable tires are the basis of real automobile usefulness.

Kelly-Springfield road mileage is a few thousand miles higher than the average. That reduces the cost of the tire.

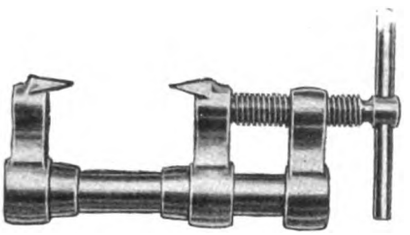
The easy resiliency of Kelly-Springfield Tires is one phase of our argument. But staunchness and durability, born of the best rubber composition, skill and the incentive to make good tires better, offer a reason even more convincing—wear.

When you buy Kelly-Springfield Tires you are not experimenting. We have done that for you.

Kelly-Springfield Tire Company, 20 Vesey Street, New York

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Make Your Car Ride Easier



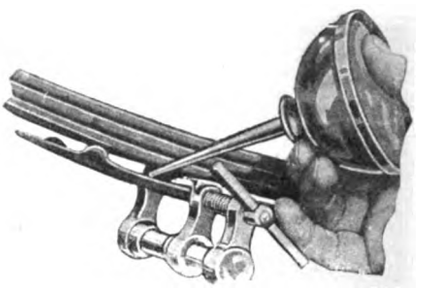
Patents Pending.

A Spring Leaf Lubricator

(GUARANTEED)

adjustable to any size automobile spring. Simple, Quick and Effective, separates the leaves **just enough** to insert the lubricant, and will not **damage** or **mar** your springs. The damaging cold chisel and hammer no longer necessary.

When the leaves of your springs are not lubricated they become rusty and freeze or adhere to each other. They are soon like one solid piece of steel. Then your car rides hard; **Squeaking** occurs and breakages become frequent.



Spring Leaf Lubricator.

Lubricate your Springs Properly and you Get More Comfort, More Pleasure, Less Breakages, Less Expense and No Squeak, and 50 to 100 per cent More Resiliency and Longer Life out of Your Springs.

Price $1.50 Postage Paid

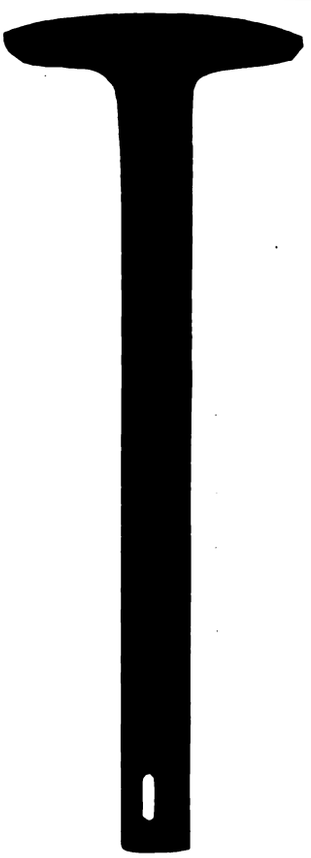
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THINK THIS OVER, very carefully and read it twice, if necessary.

Is there any part of an automobile engine, or any other gas engine, that is more important to its efficiency than a Valve?

Your engine leaves the factory running smoothly and sweetly—tuned up to its highest power. Perhaps the valves pit—warp—go out of shape—fail to hold compression. Then the power diminishes, and what can be more aggravating to the driver, who has known the fullness of the pulling power of his motor, than to have it grow less and less?

You cannot slight this part by putting in an inferior product—valves that will give trouble, or even break from inexperience in their manufacture—valves of unsuitable material, not suitably heat treated.

Too much is at stake, and a slight extra cost at the outset, which is the exception, may save you many times over a probable later expense.

This Company, with the experience of many years as a guarantee, will furnish you with properly made valves, of the materials best adapted to your requirements.

Not only QUALITY, but efficient SERVICE is a factor—surely there is a satisfaction in getting the kind of work you want—when you want it.

THE ELECTRIC WELDING PRODUCTS COMPANY
CLEVELAND, OHIO

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Glide

In 1917—Five Years Hence

the 1913 GLIDE will still be a **modern,** serviceable car. Why? Because the present GLIDE leaves but very little that can possibly be improved upon.

It is far ahead of many 1913 cars—and **no** car is **leading** the GLIDE in high-class materials, construction and all of the newest equipment.

The 1913 GLIDE is **electric lighted**—simply turn a button and all lamps are on!

The GLIDE Motor-Driven Tire Pump eliminates drudgery. Also **saves your tires** by keeping them fully inflated at all times to any desired pressure.

Electric **Bull's Eye** Side Lamps are **sunk in dash,** eliminating rattling, minimizing breakage and adding to the classy appearance.

The GLIDE Self-Starter is **sure** of a spark—**investigate** and learn **why** the GLIDE starter is **efficient.**

Simple center control, left side drive, demountable rims, irreversible steering gear—and in fact all the newest features of known worth—establish the "class" of the 1913 GLIDE.

Make a memo—right now—to write us for detailed description of the entire GLIDE line.

"36-42" Features

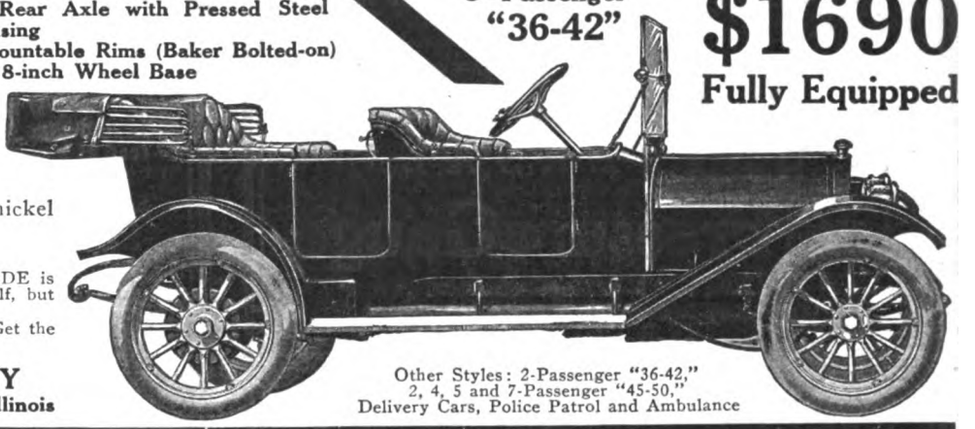
Automatic Dynamo Lighting System
Motor-Driven Tire Pump
Unit Power Plant
Long Stroke Motor with *enclosed valves*
Center control
Left Side Drive
Bull's Eye* Electric Side Lamps *Sunk in Dash
Electric Headlights and Tail Lamp
An *Efficient* Self-Starter
Floating Rear Axle with Pressed Steel Housing
Demountable Rims (Baker Bolted-on)
118-inch Wheel Base

You can't get GLIDE quality, equipment and service **in any other car** at the GLIDE price. Make us prove it! You can pay **more** and get **less.**

Our price includes complete equipment, as follows: Dynamo, Mechanical Tire Pump, Self-Starter, Mohair Top, Top Boot, Glass Front, Electric Headlights, Side Lamps and Tail Lamp, Demountable Rims and One Spare Rim, Model B Stewart Speedometer with Grade Indicator, Spare Tire Carrier. Full quota of tools and jack, all nickel trimmings.

5-Passenger "36-42"

$1690
Fully Equipped



Other Styles: 2-Passenger "36-42," 2, 4, 5 and 7-Passenger "45-50," Delivery Cars, Police Patrol and Ambulance

Dealers

The extraordinary quality and equipment of the GLIDE is apparent to the most experienced. It not only sells itself, but every car sells others.

Write for our attractive Dealer's proposition today. Get the GLIDE agency **now,** while there is still open territory.

THE BARTHOLOMEW COMPANY
220 Glide Street **Peoria, Illinois**

The Hotel of Comfort **The WOODSTOCK**

"You can walk from there to anywhere"

Our new addition is ready for occupancy.
We now have 360 rooms with 265 baths.
Write us for descriptive folder with typical floor plan and rate card.
Wire for reservation at our expense.

RATES

Court room with bath, for one, per day.....$2.50
Court room with bath, for two, per day..... 3.50
Outside room with bath for one, per day..... 3.00
Outside room with bath, for two, per day..... 4.00
Outside room with twin beds, for two, per day $4.00



HOTEL WOODSTOCK
127 W. 43d St.
New York

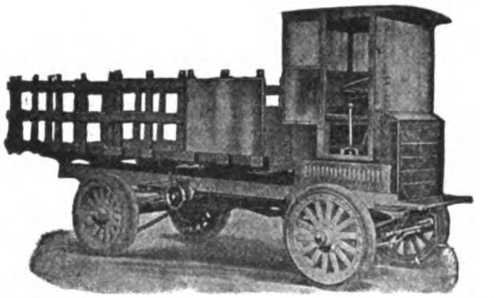
W. H. Valiquette, Manager.

Also
"THE BERWICK"
Rutland, Vermont

Lauth-Juergens

Lauth-Juergens Trucks are Delivery Insurance

QUALITY **DURABILITY**
ONE, TWO AND THREE TON CAPACITY



LAUTH-JUERGENS TRUCKS ARE THE LATEST IN CONSTRUCTION, most powerful in operation and the motors are guaranteed against defective workmanship and material for the life of the truck. They are positively the highest class trucks made. Two cylinder, one-ton, four cylinder, one, two and three-ton. Four speeds forward, Hess-Bright ball bearing transmission made in our own shops of the finest tool steel, three-piece disc clutch, covered by patents owned by us. Send for 1912 Catalog and specifications. Prompt delivery on all models. Large publicity campaign just begun. Our quality will do the rest.

Reliable Agents: Secure Your Territory for 1912 at Once.

The Lauth-Juergens Motor Car Co., Fremont, Ohio.

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CHICAGO—The Lauth-Juergens Motor Car Co., 2630-32 Wabash Ave.
NEWARK, N. J.—Merchants Motor Car Co., Essex Building.
DETROIT, MICH.—Bierl Auto Truck Sales Agency, 453 Dix Ave.
DISTRICT OF COLUMBIA AND VICINITY—Bowles Motor Sales Co., Inc., 1608 14th St. N. W., Washington, D. C.

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Mr. Automobilist:

Your tire maker is very anxious to impress upon you the importance of

Tires Inflated to the Right Pressure

He insists that this is tire economy and

Saves You Money

How do you know what pressure you have in your tires? A

SCHRADER
UNIVERSAL
Tire Pressure Gauge

(Trade Mark Registered in U. S. Patent Office)



(Patented March, 1898—Other Patents Pending)

will tell the exact pressure in your tires at any time, day or night, by simply holding this Gauge to your Valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the Gauge can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the Indicating Sleeve can be pushed back into the Gauge with your finger. No catches or snaps to operate or get out of order. This Gauge is 2½ inches long over all, short enough to apply easily to the smallest diameter of wheel and can easily be carried in the vest pocket or the change pocket of your trousers.

Price $1.00 Each
Ready for Delivery Now

Guaranteed Simple and Absolutely Accurate

Can be obtained from all tire manufacturers and the dealers, or

A. SCHRADER'S SON, Inc.
28-32 Rose Street New York City



"TWENTY MILES"
Means
"TWENTY MILES"

—not twenty and a half or twenty and the smallest fraction when read on the

CORBIN-BROWN SPEEDOMETER
"The Speedometer of Permanent Accuracy"

It indicates positively your exact rate of speed. You read at a glance without strain and without the slightest element of doubt.

Sold by leading garages and accessory dealers everywhere.

Write today for Catalog and Price List.

CORBIN SCREW CORPORATION DIVISION
(American Hardware Corporation)
213 High Street New Britain, Conn.
BRANCHES: New York Chicago Philadelphia

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MOTORCYCLES

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Remy Magneto

Exchange Your Old Magneto for a New Remy

IT will cost you practically no more than what you will be forced to pay out for constant repairs on your present ignition system. A new Remy will give your car new life. Here is our exchange proposition:

	List Price	Allowance	Net to You
2-Cylinder Remy Magneto with Coil, complete.....	$46 00	$ 9 20	$36 80
4-Cylinder Remy Magneto with Coil, complete.....	50 00	10 00	40 00
6-Cylinder Remy Magneto with Coil, complete.....	52 00	10 40	41 60

Allowance made for any make of Magneto.

Remy Electric Company
Anderson, Indiana

BRANCHES—New York, Boston, Detroit, Chicago, Kansas City, San Francisco, Indianapolis.

SERVICE STATIONS—Albuquerque, Augusta, Baltimore, Charlotte, Cincinnati, Cleveland, Denver, Dallas, El Paso, Houston, Jacksonville, Louisville, Memphis, Minneapolis, New Orleans, Nashville, Norfolk (Va.), Omaha, Los Angeles, Philadelphia, Pittsburgh, Portland (Me.), Portland (Ore.), Rochester, San Antonio, Seattle, Spokane, St. Louis, Syracuse, Utica, Washington (D. C.)

CANADA—Toronto, Winnipeg, Calgary, Hamilton, Vancouver, Montreal.

Bosch Magneto
Of Course

THE new Packard "38" Six offers the following as points of superiority:

Centralized Control

Electric Self-Starter

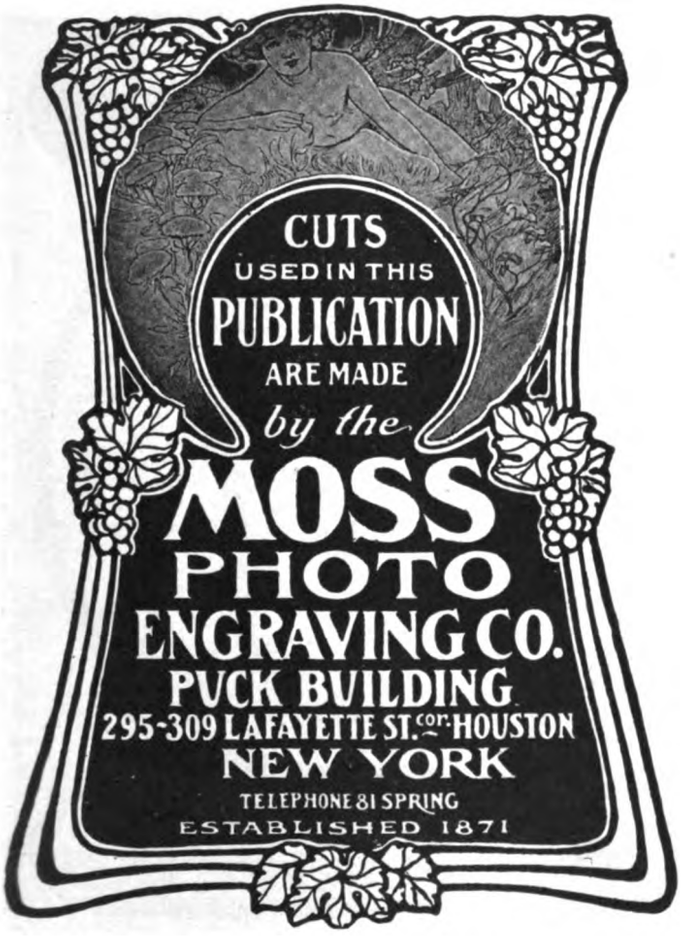
Electric Lighting

And a separate high tension magneto

IT'S "Bosch" that is considered the ideal and most reliable system of ignition

Be Satisfied **Specify Bosch Magneto and Plugs**

BOSCH MAGNETO COMPANY
223 West 46th Street New York





Model K2
Price $75

Warner AUTO-METER

WE have three times trebled our factories. More than 100,000 new cars will be equipped with Warner Auto-Meters this season. Practically all of the prominent manufacturers make the Warner Auto-Meter "regular equipment"—regardless of its HIGH PRICE.

Prices from $50 to $145. For sale by dealers all over the world and at our own branches.

Handsome catalogue on request.

The Warner Instrument Company
Beloit, Wisconsin

BRANCHES—Atlanta, Denver, Philadelphia, Boston, Detroit, Buffalo, Indianapolis, Portland (Ore.), Chicago, Kansas City, Cincinnati, Los Angeles, Seattle, Cleveland, New York, Pittsburgh, San Francisco, St. Louis.

Canadian Branch: 559 Yonge St., Toronto, Ont.

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Niagara

Dealers who handle this device can assure their trade that it is positive in action—dependable always—will not soot the spark plug.

The Niagara Self Starter mixes pure air with the acetylene gas, furnishing a rich mixture instead of pure acetylene gas, avoiding all fouling and sooting—a fault common with starters delivering unmixed gas.

Note that the compressor is made from seamless drawn steel tubing, cast iron piston and piston rings. No leather washers to wear out or rot.

DEALERS—We can interest you in this proposition. It is the biggest seller in the whole field of starters. Get the details.

NIAGARA SALES COMPANY, Buffalo, N. Y.

Self Starter

BENZ

Since the introduction of **BENZ** cars to the motoring public of America no car has attained such world-wide supremacy as to its construction, standing up quality, and material. The new type of 35 and 50 H. P. BENZ models are the last word in automobile construction.

The noticeable features of this type of BENZ cars include the offset crank shaft, smokeless oiler, and SILENT CHAINS instead of timing gears.

The BENZ Carrosseries are noted for their beautiful lines and thorough comfort.

To those desiring AGENCY of this car the Benz Company will offer special terms. We want RELIABLE, ENERGETIC agents to further our interests for both BENZ pleasure cars and BENZ-GAGGENAU trucks, which today stand recognized by those who know, as the leading 6-ton truck. Wire or write us, no matter where you are.

Our PRICES compete with LEADING AMERICAN makes.

BENZ AUTO IMPORT COMPANY OF AMERICA

250 West 54th Street New York, N. Y.

Direct Branch of Benz & Cie., Mannheim, Germany.

It Pays to Investigate Tires

The more you try other tires, the more certainly will you come back to **AJAX**, because they give you more value and better service than you can get from others.

AJAX

Guaranteed 5000 Miles **TIRES** **Guaranteed 5000 Miles**

More or less can be paid for tires, but no greater tire value exists than **AJAX**. We made sure of their dependability in actual service before deciding to guarantee them for 5000 miles.

OUR GUARANTEE IS THE STRONGEST EVER GIVEN BY A TIRE MANUFACTURER.

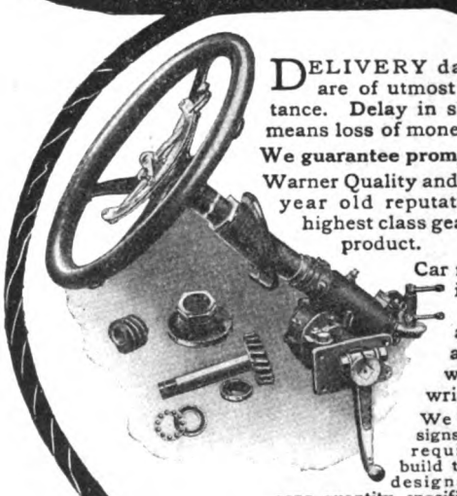
DEALERS—If you are a live, up-to-date dealer and would like to sell the best tires made, get in touch with our Sales Department.

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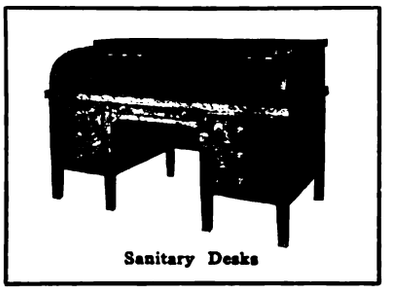
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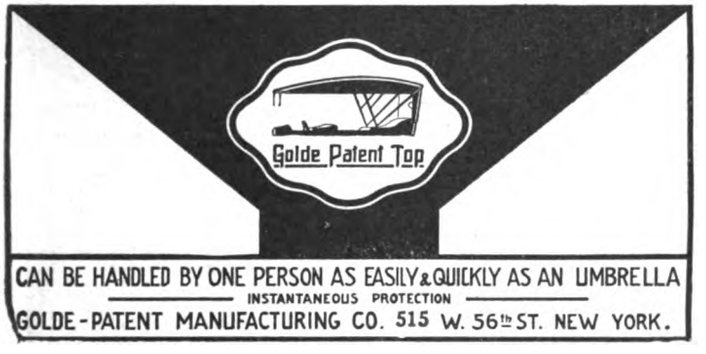
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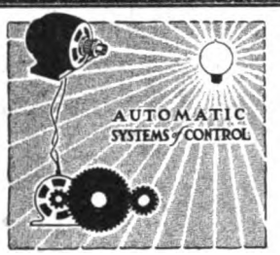
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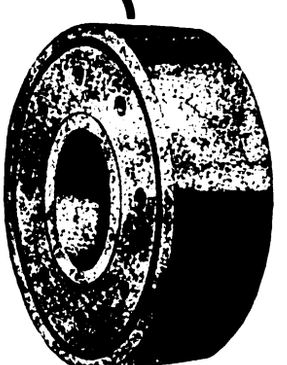
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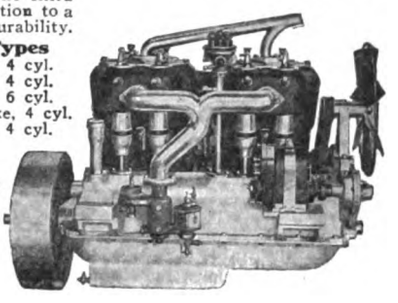
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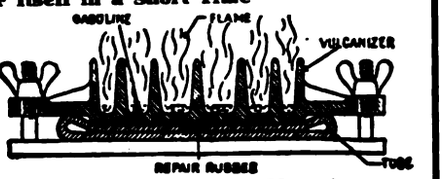
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Saves Time Saves Money
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Place tube between plates of vulcanizer (see cut); tighten thumbscrews; put a little gasoline in pronged receptacle, and ignite.



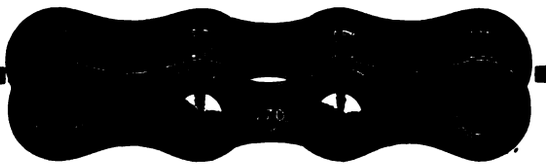
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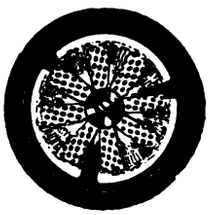
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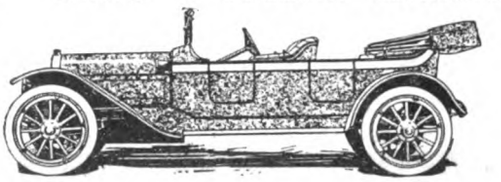
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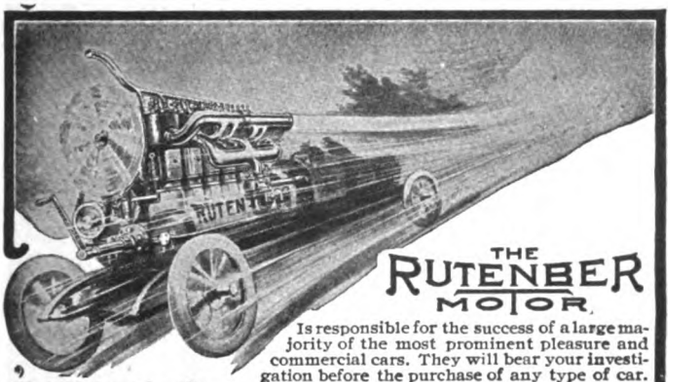
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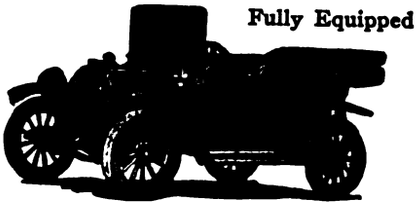
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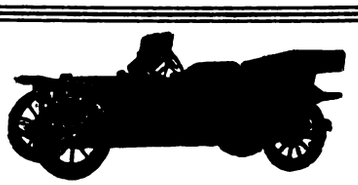
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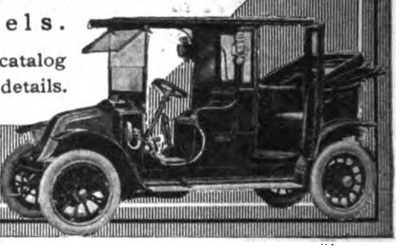
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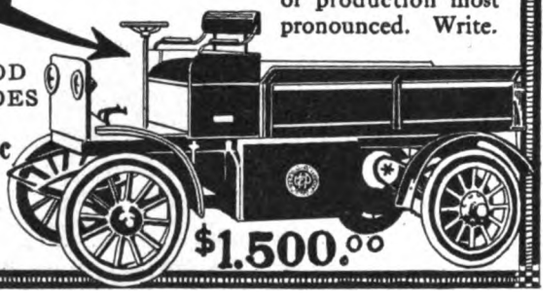


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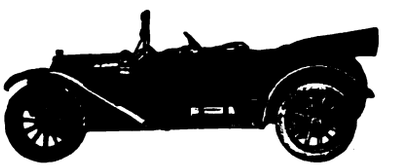
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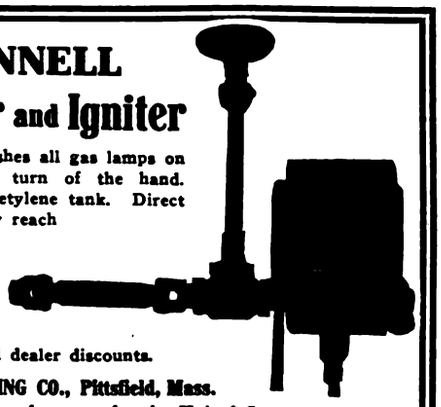


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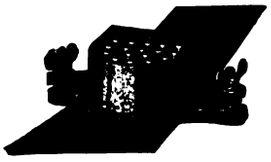


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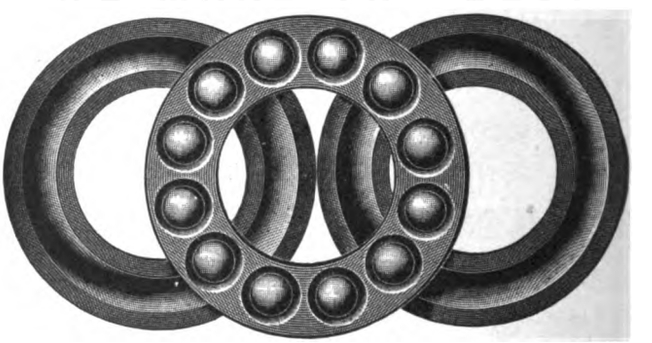
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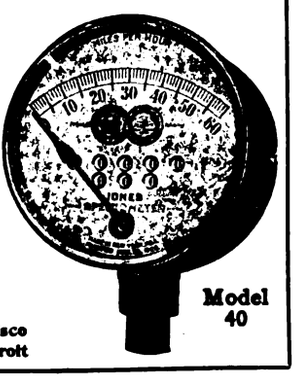
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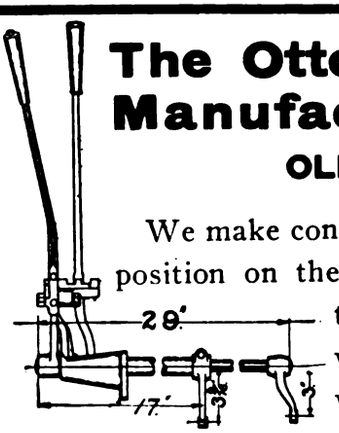


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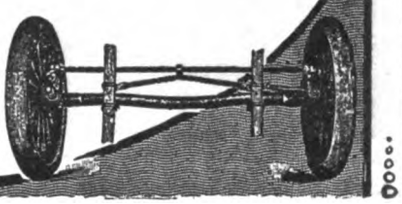
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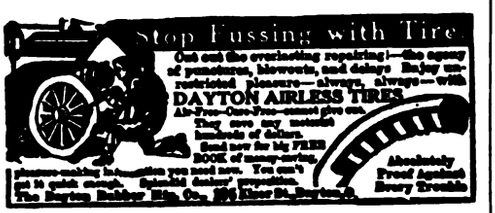
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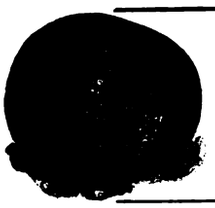
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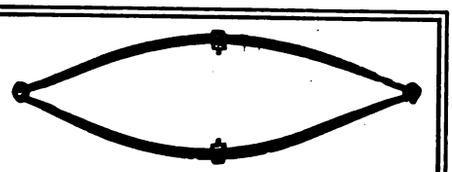
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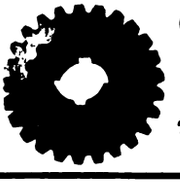
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That's our specialty, but we make a full line as well. Any style and every one the best that high-grade materials and experienced workmen can make. Prompt service assured. We're glad to estimate special work or quote you prices on stock tops. CENTRAL AUTO TOP CO., Indianapolis, Ind.

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An oil preparation that softens the leather and pantasote. Makes old tops look like new. Ask your garage and supply dealer for it.
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$75 will buy a two cylinder, two cycle, 5 x 5½, 30 horsepower, planetary type engine, fully equipped with automatic oiler, timer, complete wiring, control rods, subframe. Never uncrated. Write quick. ROSS FOUNDRY & MACHINE WKS., Rochester, Ind.

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AGENTS WANTED — To handle the $1000 G. J. G. "Junior," racy, classy and specially designed chaseabout with 104-inch wheelbase, with a real 26 H.P. motor, Bosch magneto, Dorian remountable rims with 32 x 3½ tires, at a price of $1,000, which is a money maker for the sales agent. Write for literature and discounts to G. J. G. MOTOR CAR COMPANY, White Plains, N. Y.

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PEERLESS EXTRA FINE BLACK JAPAN

Covers solid one coat for enameling lamps, radiators and fenders. No undercoat required. Heat does not affect it. Ask your garage and supply dealer.
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Dyes the cloth linings of tops and curtains a black, uniform color, covering up water stains and grease spots. Does not wash off. Ask your garage and supply dealer.
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Bakes either to a high gloss finish, eggshell gloss or dull finish on lamps, radiators and fenders. Will not crack, chip or peel. Ask your garage and supply dealer.
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SALESMEN, one who is now visiting automobile trade or owners. Good money made on a very attractive proposition. STURDY MFG. CO., 2637 Michigan Ave., Chicago, Ill.

FORD spare demountable wheel, something new. No tire trouble on road. Write. ANGIER'S, Streator, Ill.

AUTOMOBILE Cylinders reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

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Softens the leather and will not crack, wash or rub off. Makes old leather look like new. Dries in twenty minutes. Ask your garage or supply dealer.
The Columbus Varnish Co., Columbus, O.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material? Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

WHITE STEAMER, seven-passenger, model M, straight line body, 40 H.P.; absolutely perfect; complete equipment; $700. H. SNYDER, 112 West 38th St., New York. Telephone 4060 Greeley.

MAILING LISTS—Automobile owners, dealers, garages, repair shops, commercial car owners, or any make of car. OWNERS AUTO LIST CO., Albany, N. Y.

PEERLESS AUTO TOP DRESSING.

A waterproof dressing for leaking mohair and duck tops and curtains. Makes old and faded tops look like new. Ask your garage and supply dealer for it.
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AUTOMOBILES—A. C. C. A. Prices Talk! Every make. Every model. Hundreds runabouts, racy roadsters, five-seven passenger touring cars. $50 up. Guaranteed five years. Shipped Freight Prepaid! Write today for the largest Illustrated Catalog published! THE AUTOMOBILE AND CYCLE COMPANY OF AMERICA, Dept. I-N, 1769-1787 Broadway, New York City.

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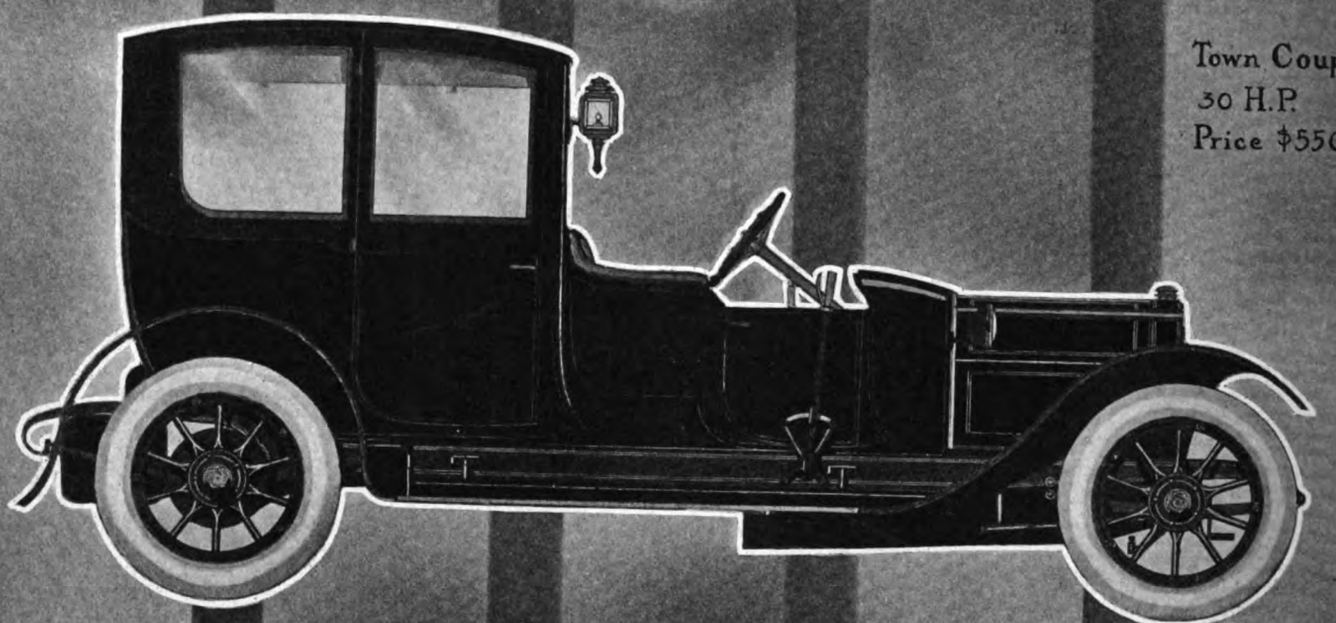
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An ad. like this will cost you 60c. for each insertion.

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Lancia
sells at
AMERICAN PRICES



Town Coupe.
30 H.P.
Price $5500

The average would-be owner of a foreign car associates out-of-ordinary quality with prices beyond reason. He, in common with the majority of those who understand car value, wants such a car; but the prices of European products are prohibitive.

Lancia cars with all of the swing, dash and exclusive design, that only foreign designers and artizans can make possible, sell at American prices.

Lancia cars, made from steel that only Europe can turn out and with engineering features that America cannot touch, sell for American prices.

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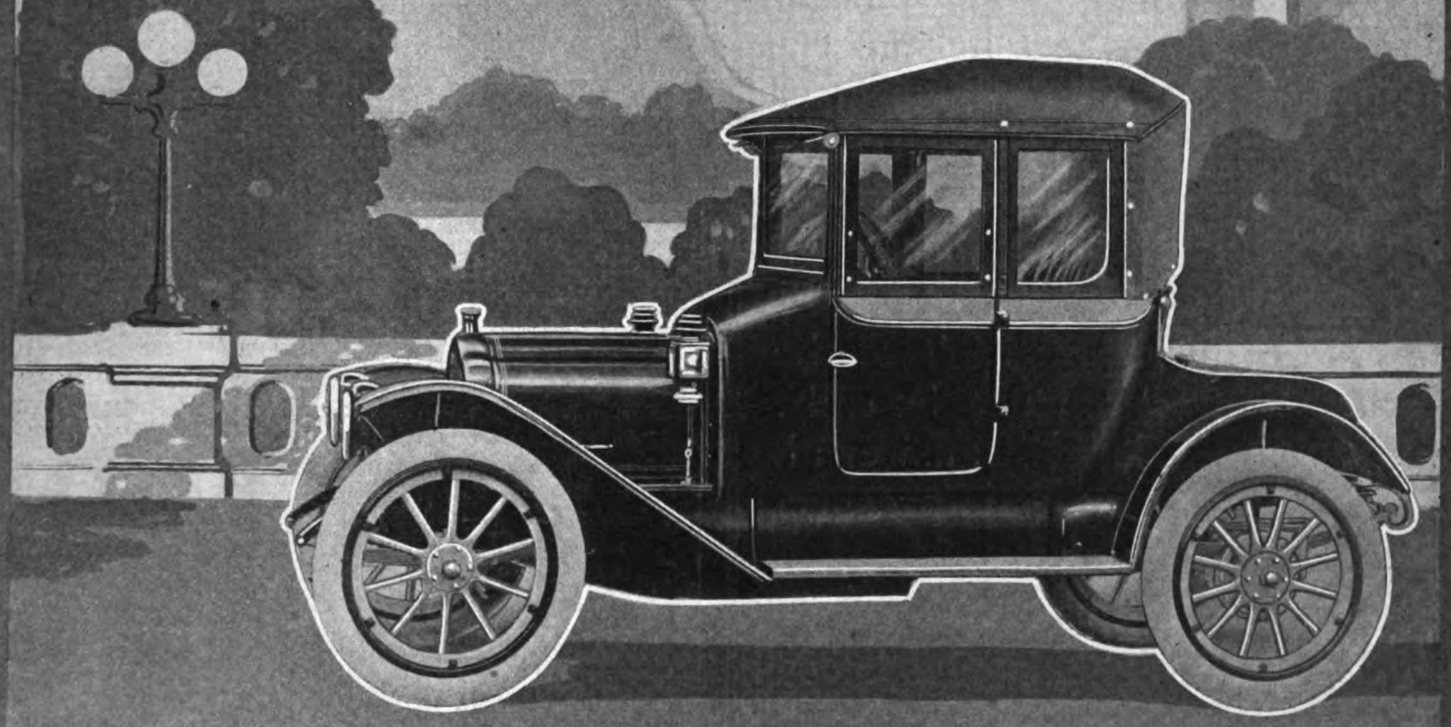
The runabout convertible body shown here illustrates one extreme of a line that goes on up to the highest grade limousine, landaulet and town car.

Even this faithful reproduction cannot approximate the beauty and convenience of the equipments as they actually appear. They must be seen to be fully appreciated.

The ease of operation is remarkable; the tops are rapidly raised into position, the doors are opened, the hinged glass swung up into position, the remaining windows are removed from a box in the back of the front seat and buttoned into position, completely enclosing the car in less time than an ordinary top can be erected and the curtains adjusted.

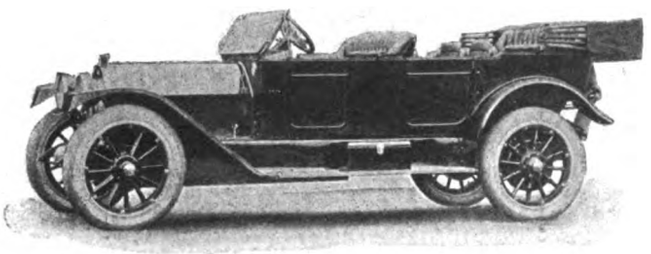
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Springfield, Mass.



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Kline Kar Model 6-60, Touring, $3500

DEALERS

YOUR experience with other cars should tell you that it does not pay to handle a line that constantly worries the life out of you with complaints from the user, who has trouble with the machine. This user knows now that he is better off when he buys a car of quality in the first place, even though he must pay a little more for it, and he will soon begin to demand such a car of his dealer.

It is up to you to have the car in your line when he calls. The Kline Kar will answer all the requirements this prospect may impose and more.

Prices $1850 to $3500
(Fully Equipped)

Get Our Proposition

Kline Motor Car Corporation
YORK, PA. **RICHMOND, VA.**

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BOSCH Plugs

Like Bosch Magnetos

The winners use them—Of Course

Vanderbilt Cup Race
Grand Prize Race
Elgin Trophy Race
500 Mile Sweepstakes
Santa Monica Races
Road Racing Record
Most Speedway Records

The above is a partial list of 1912 races won by cars using Bosch Plugs—most of the "also rans" used them too.

When the majority of racing drivers and manufacturers entering cars in important races use one make of plug, you can be positive that there is reliability and efficiency in that plug.

Successful drivers do not use any plug before they are absolutely certain of its ability to stand the test—they have found Bosch superior to any other; they use Bosch exclusively.

If you own a car, Buy Bosch Plugs
If you sell cars, Specify Bosch : $1.00 Each

"Locating the Spark Plug"
an educational booklet, free

BOSCH MAGNETO COMPANY
223-225 West 46th Street, New York

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$985 Overland $985

Completely Equipped

Self-Starter
30 Horse-Power
5-Passenger Touring Car
110-Inch Wheel Base
Timken Bearings
Center Control
Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision, Rain Vision Wind Shield
Prestolite Tank

High-priced feature No. 5

We have put the very best and most expensive bearings—Timken and Hyatt—into the Overland Model 69T. They are the same brand as used in $5000 and $6000 cars.

The sturdy I-beam section, drop-forged Overland front axle is equipped with Timken bearings.

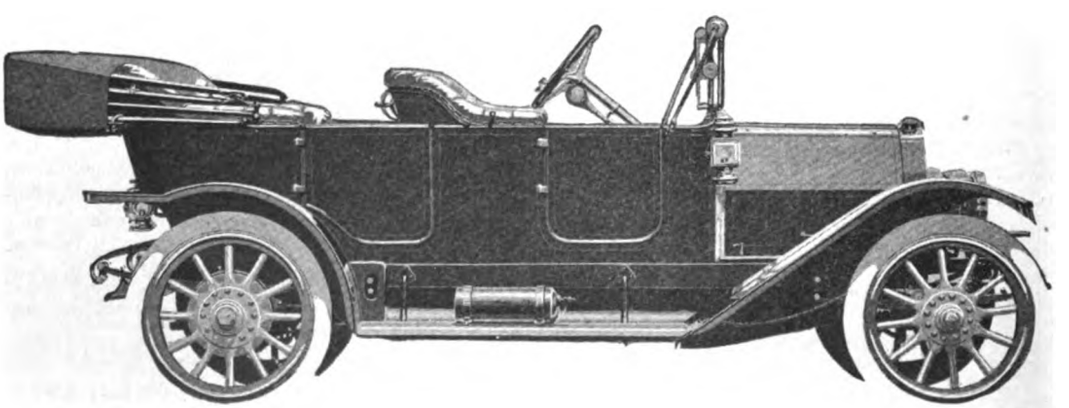
The three-quarter floating Overland rear axle is equipped with Hyatt bearings.

The Overland 69T motor possesses a five bearing crank shaft—not a three bearing. And the action of the Overland 69T transmission is secured by more high grade and expensive bearings.

Quantity production—40,000 cars yearly—alone permit these high priced features.

A post card will bring a catalogue, which explains the many high priced features on this moderate priced car. Please address Dept. 50.

The Willys-Overland Company
Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, November 28, 1912 No. 10

DE SCHAUM OUT, PALMER RE-ENTERS MOTOR INDUSTRY

Cartercar's Organizer Enters Ecorse Enterprise Which Takes His Name —Project Finally Placed on Practical Basis.

Having separated itself from William Andrew De Schaum, the exploiter who promoted the Suburban Motor Car Co. in Ecorse, Mich., and who sketched for it plans and properties of a gigantic and picturesque character, developments in the reorganization of the company have followed quickly.

As Motor World of last week exclusively stated, W. H. Lankin, president of the Suburban company, temporarily took over De Schaum's duties as general manager, and on Saturday last the full meaning of the change of affairs became plain when R. A. Palmer entered the company as vice-president and general manager, and the name of the corporation changed to Palmer Motor Car Co.

Palmer was the organizer of the Cartercar Co. of Pontiac, Mich., of which he was general manager until about a year ago, when he resigned to engage in a banking business, in which he still retains his interest.

As the Suburban factory is nearing completion, and as the car which it will manufacture has been well tried out, with Palmer's knowledge and experience to guide it, its progress seems assured.

H. W. DuPuy Assumes Dual Duties.

Due to the fact that his duties as chairman of the board of directors of the Crucible Steel Co. of America have prevented him from taking an active part in the management of the Pennsylvania Rubber Co., of Jeannette, Pa., Herbert DuPuy relinquished that office at the annual meeting which occurred last week. H. Wilfred DuPuy, treasurer of the company, was chosen president and hereafter will fill both offices, Herbert DuPuy consenting to act as chairman of the board, which office was created for him. The other officers were re-elected as follows: Charles DuPuy, vice-president; Seneca G. Lewis, general manager; George W. Shively, secretary; Charles G. Morrill, assistant treasurer. According to reports rendered at the annual meeting, contracts in hand assure an increase of at least 100 per cent. over last season's business.

Ohio Motor Car Asks for Jury Trial.

Denying insolvency, the Ohio Motor Car Co., of Cincinnati, against which a petition in bankruptcy was filed on September 26th last, has asked the Federal Court in that state for a hearing before a jury. Meanwhile, Edward C. Schultz, receiver for the company, has received a formal bid of $65,000 for the property and the court has directed that the matter come up for a hearing on December 2nd. Unless a better offer is made before that date, the receiver states that he will recommend the acceptance of the $65,000 bid which, in his opinion, is better than offering the assets separately at auction.

White Disposes of British Interests.

Frederick Coleman, who, as managing director, has had charge of the White Co.'s branch in London since its establishment, has acquired the business, which hereafter will be conducted under the style White-Coleman Motors. White cars, of course, will continue to be his chief stock in trade, but it appears not impossible that he may enlarge his scope.

Change that Avoids Confusion of Ideals.

The Ideal Commercial Car Co. of Akron, O., has changed its name to the Akron Motor Car & Truck Co. The change will serve to prevent the Akron company's further confusion with the Ideal company of Indianapolis, which produces the Stutz motor car.

WILLYS-OVERLAND STOCK IS OFFERED TO THE PUBLIC

Offer, Limited to Preferred Shares, Discloses Remarkable Growth and Earnings—Profits Average $2,490,000 Per Annum.

Having completed its incorporation under the laws of Ohio, the new Willys-Overland Co., of Toledo, which succeeds the old company of the same name, now is offering for public subscription, through William Salomon & Co. of New York, its issue of $5,000,000 7 per cent. cumulative preferred stock.

The total authorized capital of the new company, as already is known, is $25,000,000, of which $5,000,000 is represented by preferred shares and $20,000,000 by common, the majority of the latter being closely held by John N. Willys and his associates.

The preferred shares are being offered for sale at par, $100, the dividend being payable quarterly, in January, April, July and October. They are redeemable, in whole or in part, at the option of the company at 110 and accrued dividends on 60 days' notice. The shares are preferred as to both assets and profits, but without vote or consent of at least three-quarters of the outstanding preferred stock the company cannot sell or dispose of its property or business, in their entirety, or any stock of any affiliated company, except to the Willys-Overland Co. itself or to some other affiliated company, or create any mortgage or other lien, or issue any stock having priority over or on a parity with the preferred stock, or issue or guarantee any bonds, notes or other evidences of indebtedness maturing later than one year from date of issue. The same requirements apply to the several subsidiary companies—namely, Kinsey Mfg. Co. of Toledo, Garford Co. of Elyria and Gramm Motor Truck

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Co. of Lima, all of Ohio; the Morrow Mfg. Co. of Elmira, N. Y., and the Federal Motor Works of Indianapolis, Ind.

The preferred stock will have no voting power, but no dividends will be declared on the common stock unless the consolidated net quick assets of the company and its subsidiaries (of which the company owns at least 90 per cent. of the common stock) shall be equal to the par value of the preferred stock outstanding, and no dividends in excess of 6 per cent. per annum will be declared upon the common shares unless the consolidated net quick assets shall be equal to 120 per cent. of the preferred stock outstanding.

To redeem the preferred stock, it is provided that the Willys-Overland Co. shall establish a sinking fund by setting aside, out of its surplus profits, $250,000 on July 31, 1914, and in each year thereafter, and also on the 31st day of July, 1916, and each year thereafter, any amount by which 10 per cent. of the net earnings shall exceed $250,000. The money set aside for the sinking fund, however, will not be withdrawn from the business until its actual application for retirement of the preferred stock.

The new Willys-Overland Co. acquires all of the properties and business of all of its subsidiaries except that there remains outstanding $500,000 7 per cent Garford preferred stock, and $451,800 preferred and $230,000 common of the Gramm Motor Truck Co.; also $20,700 Morrow common.

The prospectus offering the Willys-Overland preferred for public subscription discloses some hitherto unknown or little known facts concerning the inception of the Willys business and its present condition.

It appears that the initial investment made by John N. Willys in the Spring of 1907 was $11,000, which it is no secret Willys had to borrow. During the five years that have intervened, the total net assets, which, be it noted, are exclusive of goodwill, patents, trademarks, etc., which so often figure so largely in stock offerings, have increased to more than $10,800,000.

The sales of the Willys-Overland Co. during the period have increased from 323 cars in 1907-1908 to 22,548 in 1911-1912, and already for the fiscal year beginning June 30 last the company has closed contracts for the sale of 38,300 cars, which in money value represents about $40,000,000 gross.

For the fiscal year ending June 30, last, the net profits of the Willys-Overland Co. and its subsidiaries amounted to $3,335,822. The consolidated net earnings for the past three years and two months, after making adequate allowance for depreciation, aggregated $7,892,055, an average of $2,492,228 per year. In the statement which accompanies the prospectus, John N. Willys, president of the company, estimates that the net earnings for the current fiscal year will exceed $5,000,000.

Application to list the shares on the New York Stock Exchange will be made. At present the preferred is held at par, $100, and the common at $70, which quotations on estimated earnings of $5,000,000 are equal to 100 per cent. on the preferred and 33.21 per cent. on the common.

As certified by the chartered accountants who conducted the audit of the company, its financial condition as of September 30, 1912, was as follows:

Real estate, buildings and equipment (based on appraisal)		$4,293,830.38
Investment in the Garford Co. and the Gramm Motor Truck Co. (valued on basis of net tangible assets)		1,303,828.67
Current assets:		
Inventories	$5,331,465.95	
Accounts and notes receivable	1,839,832.41	
Cash	1,102,674.33	
Total current assets	$8,273,972.69	
Less current liabilities after giving effect to the application of new cash to the reduction of current liabilities	3,045,325.47	
Net current assets		5,228,647.22
Net tangible assets (exclusive of good-will, trade marks, etc.)		$10,826,306.27

Five Dealers Form "Mutual Agencies."

Mutual Motor Agencies of California is the style under which five dealers in Northern California have banded themselves to serve better their needs, and more particularly with a view of securing the agency for a medium priced car for the entire northern half of the State.

The organization is due to the efforts of A. E. Hunter, of the A. E. Hunter Auto Co. of San Francisco, and in addition to the Hunter company includes the Osen & Hunter Auto Co., of Oakland; Skinner & Elliott, of Sacramento; J. C. Skinner, of Stockton, and the Cousins & Howland Auto Co. of Hanford. Messrs. Hunter, Elliott and Cousins are now in the East looking over the field and selecting a car which best meets their purposes.

The organization of the Mutual Agencies will not in any way affect the individual interests of the several companies involved, while it is not improbable that if favorable opportunities present themselves more than one make of car will be handled by the Agencies.

Stockholders and Creditor in Tug.

Former stockholders and creditors of the old Mais Motor Truck Co. are engaged in a tug of war for the possesison of $35,000 and a mortgage of $47,000, which is in the hands of the receiver, Franklin Vonnegut, intervening petitions in the case having been heard in the Superior Court in Indianapolis last week. It appears that previous to the appointment of the receiver the stockholders subscribed $75,000 to avert disaster, and they now are seeking to have their claims recognized as preferred claims, while the attorneys for the creditors are fighting for a distribution of the money. No decision has been rendered, but the proceedings in no way affect the present Mais company, which took over the property when it was offered for sale last summer.

New Men in Warren Company.

In accordance with the plans outlined two weeks ago, when the creditors extended a helping hand to the Warren Motor Car Co. of Detroit, the official make-up of the company underwent a change at a meeting held on Thursday last, when several of the officers tendered their resignations and were succeeded by men chosen by the creditors. Homer Warren and C. R. Wilson, of the old company, were retained in office, the former as president and the latter as vice-president. The other officers elected were L. M. Hamlin, treasurer; Fred T. Lewis, secretary, and R. W. Allen, assistant secretary-treasurer and general manager. In addition to Messrs. Warren, Wilson, Hamlin and Lewis, the latter of whom represents the Lewis Spring & Axle Co., the directors are C. Haines Wilson, of the Warren company; C. G. Jencks, Port Huron Engine Co.; Philip Jahn, Bosch Magneto Co.; John Mowe, Firestone Tire & Rubber Co., and Harry Bassett, Weston-Mott Co.

Rajah Sues for Insulator Infringement.

The Rajah Auto Supply Co., of Bloomfield, N. J., maker of the Rajah spark plug, has filed suit in the United States District Court for the Southern District of New York against the American Auto Supply Co., of 1697 Broadway, New York City, alleging infringement of patent No. 825,856. under which the Rajah product is manufactured. The particular claim is that the defendant sold infringing porcelain insulators, which form a renewable part of the Rajah plug, the complainants alleging that their business has thereby been greatly damaged.

Hupmobile Trio Sails to Paris Show.

C. D. Hastings, general manager; C. H. Dunlap, export manager, and E. A. Nelson, consulting engineer, all of the Hupp Motor Car Co. of Detroit, are booked to sail to Europe on November 30th. They will visit the Paris show, of course, and will also attend the conference of the Hupp company's European dealers which, under the auspices of John L. Poole, European export manager, will be held in Paris, in the Hotel Marjorie, on December 13th.

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WYCKOFF SALE ARRANGED; BUYERS REMAIN SHROUDED

Offer of $150,000 for Property Accepted, but Mum's the Word—800 Creditors May Receive 28 Per Cent.

Interests represented by Chester Griswold and Attorneys Howard C. Dickerson and George A. Ellis will come into possession of the Wyckoff, Church & Partridge property on December 1st. Their bid of $150,000, on which the New York banking house of H. B. Hollins & Co. gave bond, was accepted by the referee in bankruptcy at a meeting held for the purpose on Friday last, 22nd inst.

The identity of the men represented by Messrs. Griswold, Dickerson and Ellis is, however, still shrouded in mystery. All of those concerned in the transaction are close-mouthed and will give absolutely no information. While it is generally understood that the business of manufacturing American Commer trucks and Guy Vaughan touring cars will be continued, how or when, by whom or under what name are subjects about which none, apparently, dare speak or care to speak.

The Griswold-Dickerson-Ellis purchase includes all of the Wyckoff, Church & Partridge assets, including the factory in Kingston, N. Y., and two leaseholds in New York City, but does not include the bankrupt company's claim against the Driggs-Seabury Ordinance Corp., of Sharon, Pa. The purchase price, $150,000, is to be paid in three installments of $50,000 each, in four, eight and twelve months. The property is appraised at approximately $171,000.

The cash received from the sale, in addition to $39,304, cash on hand, will, according to the receiver, John S. Shepard, permit a payment of about 28 cents on the dollar to the creditors, of whom there are about 800. The unsecured claims amount to about $575,000. The principal creditors are as follows: H. M. Swetland, $150,000; Driggs-Seabury Ordnance Corporation, $76,407; Commercial Trust Co., $62,601; Commercial Cars, Ltd., Luton, England, $52,005; Polack Tyre Co., $26,870; A. W. Church, $20,000; National Ulster County Bank, Kingston, $20,000; H. W. Johns, Ardsley, $15,500; C. F. Wyckoff, $10,290; Wyckoff Advertising Co., Buffalo, $10,140; Firestone Tire Co., Akron, O., $9,859, and G. W. Sheldon & Co., $6,124.

At the meeting before the referee in bankruptcy, at which the sale was authorized, Receiver Shepard was elected trustee in bankruptcy under a bond of $25,000. During the proceedings, it came out that among the many plans for disposing of the property which had been considered since its failure on March 14th last, was one whereby the assets would be taken over by the already tottering United States Motor Co., which, it was stated at last Friday's hearing, failed at about the time the contract was to be signed.

Creditors to Advise Pontiac Flanders.

In an effort to assist the Flanders Mfg. Co., of Pontiac, Mich., out of the financial rut into which it has fallen, its larger creditors held a meeting in Detroit last week, at which an advisory committee of seven was appointed. A sub-committee of three also was named, comprising George W. Rogers, of the Goodyear Tire & Rubber Co.; W. S. Thomas, of the Wagner Electric Co., and M. T. Douglas, an attorney representing several of the larger stockholders, which committee will delve deeper and submit recommendations.

Daniels Buys into Metalware Factory.

Smalley Daniels, who several months since removed from Boston to Detroit, where he organized the Smalley Daniels Co. of Michigan, has acquired an interest in the firm of G. F. Mitchell & Son, Cleveland, O., of which he will become sales manager. The firm manufactures metal tool boxes and later will produce drip pans, mufflers, funnels, etc.

Hydraulic Pressed Steel Buys Six Acres.

The Hydraulic Pressed Steel Co. of Cleveland, which is an extensive producer of automobile frames, among other things, has purchased a site of about six acres at East 55th street and Bellflower avenue, in that city. It is the company's intention immediately to erect a plant which will cover three of the six acres, the other three being reserved for future needs.

Mosler Prosecutes Sporting Goods House.

Claiming infringement of the Spit-Fire spark plug patents, Nos. 698,042 and 738,831, A. R. Mosler & Co., of New York City, has filed suit in the United States District Court for the Southern District of New York against the New York Sporting Goods Co. The infringement charged is similar to that of numerous other Mosler prosecutions—namely, price-cutting.

Morgan Truck Offers 15 Per Cent.

The Morgan Motor Truck Co., of Worcester, Mass., which failed on October 3rd last, has offered its creditors a settlement of 15 per cent., which, it is stated, has been accepted by a majority It is expected that a distribution will be ordered at a hearing ordered in the United States Court in Boston, which is fixed for December 3rd.

U. S. MOTOR REORGANIZERS TO OPPOSE BANKRUPTCY

Formidable Array of Counsel Will Contest Petition Filed in New Jersey—Claim Insufficiency and Predict Dismissal.

Appearing not at all worried over the petition in bankruptcy which, as stated exclusively in Motor World, was filed last week in the Federal Court in Trenton, N. J., by three small creditors against the Untied States Motor Co., the reorganizers and receivers are going ahead with their plans, and the latter state that next week advertisements of the sale, fixed by the Federal Court in New York City to occur January 8, will appear in various publications; the bankruptcy matter, it is stated, will be dismissed if present plans of the reorganization and creditors' committees do not miscarry.

The bankruptcy matter will be heard in Trenton next Monday, 1st prox., when a formidable array will greet the three petitioners. "The bankruptcy will be contested by the United States Motor Co.," said James N. Rosenberg, attorney for the receivers, "and it is my opinion that nothing will come of it. We do not think it can have any effect upon the decision of Judge Hough in this city. Henry V. Poor, attorney for the Reorganization Committee, will appear; the company's New Jersey counsel, Malcolm G. Buchanan, of Trenton, will be on hand, and a number of the largest creditors will be represented by counsel. We are informed that Amos Lint, the smallest of the petitioning creditors, has no valid claim at all and we believe the whole proceedings will be dismissed for insufficiency. The petitioners present no facts sufficient for an adjudication in bankruptcy."

One of the strongest points in the opposition to the bankruptcy petition is likely to be the appearance of the major creditors, whose desire that bankruptcy be avoided and a reorganization effected is considered as worthy of attention by the court.

Mosler Discontinues Spark Plug Suit.

Following the decision of the United States District Court for the Southern District of New York that the Canfield spark plug patent, No. 612,701, owned by A. R. Mosler & Co., of New York City, is not basic, the infringement action brought last year by Mosler against the Motor Car Equipment Co., of New York City, was discontinued Friday last, 22d inst. This was apart from the case against John Lurie, through which action the patent was adjudicated.

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"HONEYCOMB" PATENT HELD VALID BY BRITISH COURT

Daimler Given Decision Over Fiat in Radiator Suit, but Appeal is Likely—American Makers Soon to be Sued.

According to present indications, it is not unlikely that the patent which covers the much-used type of honeycomb radiator soon will be given an airing in this country, additional strength having been given it last week by the Chancery Division of the British courts; Justice Joyce, who heard the evidence, gave judgment against the F. I. A. T. Motor Car Co. in an action brought by the Mercedes Daimler Motor Co., Ltd., for infringement of the Daimler company's patent on a radiator which is described in the patent specifications as "an assemblage of square tubes so arranged that the hot water from the cylinders is pumped into thin, flat chambers and there cooled by the chilled air rushing through the square tubes above and below."

The construction, briefly, is that of the familiar honeycomb radiator and is covered by the Americman patent No. 709,416, issued to Wilhelm Maybach on September 16, 1902, and assigned to the Daimler Mfg. Co., a New York corporation. It is under the latter patent that a number of suits likely will be started in the near future. As a matter of fact, it has been known for some time that the Daimler Mfg. Co. was preparing to sue a number of American manufacturers on this and several other patents, among which are the "gate change," the "fan flywheel," the "dished axle" and "water cooled brake," the first indication having been given about a year ago. The Daimler lawyer in New York on Tuesday last stated that the matter still is in hand, but just when the suits will be instituted has not been determined.

Action in the British case just decided against the Fiat company really hinged on whether, in view of what was known at the time the patent was issued, there was sufficient subject matter in the specifications to justify the patent. It is likely that the judgment will be appealed.

Daimler Import Files its Schedule.

Schedules in bankruptcy, filed Saturday last, 23d inst., in the Federal Court in New York City by the Daimler Import Co., show liabilities of $67,261.26 and assets of $4,626.54, all claims being unsecured. Those claims which are of four figures are: New Netherland Bank, judgments entered October 18, $17,060.55, and $6,218.34; Lawrence F. Braine, money advanced, $25,000; Daimler Mfg. Co., royalties and money loaned, $7,546.98; H. Content & Co., rent, $2,701.18; James A. G. Pennington, of Norfolk, Va., judgment on claim for deposit on an undelivered truck, $2,017.68; H. M. Henson, legal services, $1,000; Kiddle & Wendell, legal services, $2,558.25. Among the assets are: Cash on hand, $26.54; one bond, in hands of receivers, guaranteeing contract with W. H. Bertrand, $2,000; one used car, parts and one automobile fire engine of doubtful value, $600; accounts, $1,000; import rights, contract with General Vehicle Co., claim against Daimler Motoren Gesellshaft and claim against Boulevard Garage Co., of Philadelphia, Pa., the value of which are unknown.

Judgment Seeker Now Judgment Debtor.

As a result of having attempted to collect a claim of some $200 for goods sold and delivered to the Renault Freres Selling Branch, Inc., of New York City, the Republic Rubber Co., of Youngstown, O., was this week transformed into a debtor in the case when the Renault attorney filed in the New York county clerk's office a judgment for $17.17 costs. The $200 claim was disputed and the suit over it was decided adversely to the Republic company, which, of course, meant that costs must be met by it. Thereupon, while the Republic company was preparing to proceed further with the case, the attorney "stole a march" by filing a bill for costs, which likely will mean little in the event of the contemplated proceedings.

More Capital for Akron Tire Company.

A meeting of the stockholders of the American Tire & Rubber Co. of Akron, O., has been called to consider a proposed increase of the capital stock from $200,000 to $500,000. The company has been established for only about seven months, but it is said to be erecting an addition to its plant which will require more money to permit of expansion.

Machine Tools for the New York Show.

As a result of a conference with President Bullard, of the National Machine Tool Builders' Association, it has been decided to make a machine tool exhibit an added feature of the New York show. It will form a part of the second week's display, which will be devoted to commercial vehicles.

Cincinnati Leather Goods House Assigns.

The A. T. A. Nelson Co., manufacturers of leather goods for automobiles and carriages at 2528 Colerain avenue, Cincinnati, made an assignment to David Lorbach on Saturday last, 23rd inst. Its estimated assets are $13,700 and its liabilities $21,678.

SUED FOR $1000, NOBLEMAN REPLIES BY ASKING $10,000

Krit Company's Export Experience With Dutch Baron Proves Diverting—Their Assertions in Court Widely Disagree.

Baron Van Der Noot de Moorsel, Dutchman, diplomat and demonstrator, has filed an answer to the action recently brought against him by the Krit Motor Car Co., of Detroit, whose agent he once was supposed to be. The sum asked by the Krit company is $1,000 and, with the nobleman, Philip Breitmeyer was named as a co-defendant for alleged violation of contract. Breitmeyer was involved because he was a sort of surety for the more or less distinguished foreigner.

The Krit Motor Car Co. asserted in its petition that the baron was offered a large commission and the use of two cars for his services as European representative. He was to use one car for demonstration and exhibit the other at the show in Brussels in the hope of catching the fastidious eye of Belgian fashionables. He received the cars, but never tried to sell them or exhibit them in any way except as his personal equipage.

The Baron Von Der Noot de Moorsel retorts, however, that it is all a base canard and he deserves not only a vindication but $10,000 of American money. He admits having entered into the contract to demonstrate the cars but denies that he failed to keep his word. He says that he sold 48 cars and that on a commission basis of 22 per cent. there is due him $8,976, which sum remains unpaid. His sales were never confirmed, he says, because the company would not deliver the cars on his orders in spite of his pleadings and demands. His commissions due, his injured dignity and his efforts to keep faith entitle him, he declares, to $10,000.

Canadian Everitt Plant To Be Moved.

The Tudhope Motor Co., of Canada, which reproduces the Everitt (Flanders) car in the Dominion, has purchased a site of 10 acres in Windsor, Ont. When the necessary buildings are erected, it will remove from Orillia, Ont., where it now is located.

Victor Parts Acquires Large Addition.

The Victor Auto Parts Co, of Cincinnati, of which John Corcoran is president, has leased the five-story stone building at 134 West Second avenue, which adjoins its present plant, and immediately will equip it to increase its output. The addition provides 150,000 square feet of floor space.

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The Week's Incorporations

Saginaw, Mich.—Garber-Buick Co., under Michigan laws, with $10,000 capital; to deal in motor cars.

Hagerstown, Md.—City Taxicab Co., under Maryland laws, with $10,000 capital; to operate taxicabs.

Danbury, Conn.—Fillow Auto Co., under Connecticut laws, with $10,000 capital; to deal in motor cars.

Chicago, Ill.—Metallurgique Motor Car Co., under Illinois laws, with $10,000 capital; to deal in motor cars.

Coldbrook, N. B.—Maritime Motor Co., under New Brunswick laws, with $250,000 capital; to deal in motor cars.

Montreal, Que.—Dominion Tire Co., under Quebec laws, with $1,000,000 capital; to manufacture motor car tires

Philadelphia, Pa.—Fortman Mfg. Co., under Delaware laws, with $100,000 capital; to manufacture and deal in motor vehicles.

Pen Argyl, Pa.—National Transportation Co., under Pennsylvania laws, with $100,000 capital; to operate a motor delivery.

Colonial Beach, Va.—Colonial Beach Motor Co., under Virginia laws, with $1,000 capital; to deal in motor cars. Corporators—F. W. Alexander and others.

Mobile, Ala.—Sessler Motor Co., under Alabama laws, with $3,000 capital; to deal in motor cars. Corporators—Wm. E. Clark and others.

Wilmington, Del.—Auto Poster Co., Inc., under Delaware laws, with $100,000 capital. Corporators—F. R. Hansell, G. B. Martin, S. C. Seymour.

Chicago, Ill.—Calumet Co., under Illinois laws, with $6,000 capital; to deal in motor cars. Corporators—J. B. Coambs, J. L. Mittenbuhler, C. A. Anglen.

Augusta, Me.—McTernen Rubber Mfg. Co., under Maine laws, with $1,000,000 capital; to manufacture rubber goods. Corporators—E. M. Leavitt, and others.

St. Louis, Mo.—Federal Truck Co., under Missouri laws, with $10,000 capital; to deal in motor trucks. Corporators—Allen Baker, M. B. Johnson, C. F. Prescott.

Racine, Wis.—Racine Auto Tire Co., under Wisconsin laws, with $75,000 capital; to manufacture tires. Corporators—L. J. Elliott, C. Wright, M. E. Walker.

Galesburg, Ill.—Martin-Matteson Auto Co., under Illinois laws, with $10,000 capital; to deal in motor cars. Corporators—W. P. Martin, W. Martin, S. D. Matterson.

Spokane, Wash.—Abbott-Detroit Garage Co., under Washington laws, with $100,000 capital; to operate a garage and deal in motor vehicles. Corporators—Fred S. Beokwith, Colin Campbell, and others.

San Antonio, Tex.—Knight Motor Car Co., under Texas laws, with $10,000 capital; to deal in motor cars. Corporators—H. L. Knight, A. H. Danforth, A. H. Elmore.

St. Louis, Mo.—Muehling Motor Car Co., under Missouri laws, with $5,000 capital; to deal in motor cars. Corporators—George H. Muelling, Gustav Blumenthal and others.

Newcastle, Ind.—Rose City Auto Co., under Indiana laws, with $10,000 capital; to deal in motor cars. Corporators—Frank E. Smith, Charles W. Mouch, William F. Burket.

Elgin, Ill.—Elgin Motor Co., under Illinois laws, with $20,000 capital; to manufacture motors. Corporators—Edward J. O'Beirne, E. G. Adamek, Charles G. Adamek.

Chicago, Ill.—Chandler Engine Valve Co., under Illinois laws, with $60,000 capital; to manufacture motors and parts. Corporators—G. A. Critton, N. B. Dearborn, E. S. Hoskin.

Newark, N. J.—Nyberg Automobile Co. of New Jersey, under New Jersey laws, with $25,000 capital; to deal in motor cars. Corporators—C. Hallock, F. F. Moore, A. E. Hartcorn.

Salt Lake City, Utah.—Cheesman Automobile Co., under Utah laws, with $10,000 capital; to deal in motor cars. Corporators—M. R. Cheesman, M. A. Cheesman, W. S. Cheesman.

Chicago, Ill.—Abbey Auto Livery Co., under Illinois laws, with $2,500 capital; to operate a motor car livery. Corporators—George E. Waterman, John K. Lenox, Clara A. Blackwell.

Wilmington, Del.—Zee-Zee Tire & Rubber Co., under Delaware laws, with $1,000,000 capital; to manufacture motor car tires. Corporators—E. C. Boyd, N. P. Crouch, P. L. Garrett.

Newark, N. J.—Van Deman & Wainwright, under New Jersey laws, with $100,000 capital; to deal in motor cars. Corporators—F. L. Van Deman, J. S. Wainwright, H. O. Ruckle.

Beloit, Wis.—Beloit Auto & Machinery Co., under Wisconsin laws, with $10,000 capital; to deal in and repair motor cars. Corporators—Jerome Davis, R. J. Davis, O. F. Brewer.

Camden, N. J.—Electric Tachometer Co., under New Jersey laws, with $750,000 capital; to manufacture measuring instruments. Corporators—F. A. Kuntz, F. S. Muzzey, F. S. Sauerman.

Boston, Mass.—Anderson Electric Car Co., under Massachusetts laws, with $10,000 capital; to deal in motor cars. Corporators—Albert Weatherby, Frank R. Keith, Alonzo E. Yont.

New York, N. Y.—Columbia Taxicab Co., under New York laws, with $5,000 capital; to operate taxicabs. Corporators—John Graham, James Pathe, Patrick Garrity, all of 2308 Broadway.

Nashville, Tenn.—White Motor Co., under Tennessee laws, with $10,000 capital; to deal in motor cars. Corporators—S. A. Craig, G. A. Puryear, W. H. Hyde, E. S. Craig, E. E. Wood.

Milwaukee, Wis.—Archambault Motor Sales Co., under Wisconsin laws, with $25,000 capital; to deal in motor cars. Corporators—E. J. Archambault, Willet M. Spooner, Louis Quarless.

Wilmington, Del.—Torkington Tires Co. of America, under Delaware laws, with $1,300,000 capital; to manufacture motor car tires. Corporators—I. Fogg, G. D. Hopkins, G. W. Dillman.

South Bend, Ind.—South Bend Motor Car Works, under Indiana laws, with $10,000 capital; to repair motor cars. Corporators—John D. J. Farneman, Alfred C. Mecklenburg, Hilton Hammond.

Dunkirk, N. Y.—Niagara Motors & Mfg. Co., under New York laws, with $275,000 capital; to manufacture motors and parts. Corporators—Edward J. West, Morris M. Hedden, Daniel W. Frey.

Passaic, N. J.—American European Rubber Co., under New Jersey laws, with $25,000 capital; to manufacture rubber goods. Corporators—H. H. Kreuger, Albert Kreuger, Edward G. Wilhelm.

Chicago, Ill.—Buckeye Tire & Repair Co., under Illinois laws, with $2,500 capital; to deal in and repair motor car tires. Corporators—Allen S. Sinsheimer, Harry I. Thompson, Max Guthman.

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Mansfield, O.—Brucker Motor Car Co., under Ohio laws, with $5,000 capital; to deal in motor cars. Corporators—David G. Brucker, William F. Voegel, Jr., Louis Brucker, Arthur E. Courtney, J. E. Ottinger.

Toledo, Ohio.—Toledo Auto Shows Co., under Ohio laws, with $10,000 capital; to conduct motor car exhibits. Frank I. Mulholland, A. A. Atwood, H. W. Blevins, J. W. Banting, Guy R. Ford, Stanley Roberts.

New York, N. Y.—Peets-Homan Corp., under New York laws, with $2,000 capital; to deal in motors, etc. Corporators—John A. Bolles, 135 Hamilton place; Clifford S. Peets, Frank D. Homan, 10 West 62nd street.

Buffalo, N. Y.—American Kushion Kore Tire Co., under New York laws, with $10,000 capital; to manufacture motor car tires. Corporators—Chas. W. Taylor, Christopher M. Baldy, Karl E. Wilhelm, all of 558 Ellicott Square.

New York, N. Y.—Globe Tire Co., under New York laws, with $500 capital; to deal in motor car tires. Corporators—Ralph W. Morrison, 181 West 73rd street; R. D. Placak, 318 West 57th street; F. F. Nichols, 135 Broadway.

New York, N. Y.—Hallett Point Garage, Inc., under New York laws, with $5,000 capital; to operate a garage. Corporators—August Kiel, Jr., Milford, Pa.; Thomas D. Tompkins, Avon, N. J.; Gustav Rees, Jr., New York City.

New York, N. Y.—Twelfth Street Garage Co., under New York laws, with $60,000 capital; to operate a garage. Corporators—Douglas G. McOtter, 1080 Bryant avenue; William J. Devlin, Sr., 36 West 32nd street; George M. Hamilton, 4 Sheridan Square.

New York, N. Y.—Cahill Auto Works, Inc., under New York laws, with $6,000 capital; to deal in and repair motor cars. Corporators—Andrew J. Cahill, 352 West 49th street; Henry J. Cahill, 1700 Broadway; Charles E. Trainor, 54 West 139th street.

Brooklyn, N. Y.—Sea Gate Garage and Automobile Corporation, under New York laws, with $2,000 capital; to operate a garage and deal in motor cars. Corporators—Joseph F. Curtain, H. O. Coughlan, Thomas K. Mallaby, all of 34 Nassau street, N. Y.

Changes of Capitalization.

Detroit, Mich.—B. F. Goodrich Co. $10,000 to $500,000.

Springfield, Ohio—Victor Rubber Co. from $100,000 to $69,000.

Detroit, Mich.—Everitt-Metzger-Flanders Co. from $1,000,000 to $500,000

Galion, Ohio — Cleveland - Galion Motor Truck Co. from $300,000 to $1,000,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve To Place Many Workers In New Places—Few Leave the Industry.

C. M. Clement, former manager of the Weston-Mott Co., has been appointed production manager for the Metal Products Co. of Detroit, Mich.

T. A. Flaherty has been appointed manager of the Prest-O-Lite branch in Los Angeles. Previously he was identified with the home office in Indianapolis.

Carl J. Secoir, purchasing agent of the Havers Motor Car Co., of Port Huron, Mich., has resigned that position and become attached to the Studebaker Corporation, of Detroit.

F. C. Colwell has been appointed district manager of the Stevens-Duryea Co. for Southern Ohio, Southern Indiana, Kentucky and Tennessee. He will make his headquarters in Cincinnati.

Fred E. Moskovics will retire from the position of sales manager of the Remy Electric Co. on March 1st next. He will be succeeded by Fred J. Urburn, who has represented the company in Detroit and Chicago territory.

W .M. Jenkins, at one time sales manager for the Amplex Motor Car Co., of Mishawaka, Ind., has been appointed Pacific Coast sales manager of the Abbott Motor Co., of Detroit. He will make his headquarters in San Francisco.

A. L. Bennett has been appointed eastern district sales manager of the Abbott Motor Car Co., of Detroit. He will make his headquarters in Boston at the salesroom of the F. A. Dutton Motor Co., which handles the Abbott-Detroit car in that city.

Barry Cool has been appointed manager of the Pathfinder Motor Car Co.'s branch in San Francisco, the parent company maintaining headquarters in Los Angeles, Cal. Cool is well known on the Pacific Coast, where he has served with the Hudson, Cadillac and Lozier agencies.

G. D. Baker, factory manager of the Olds Motor Works, of Lansing, Mich., has resigned that office to become identified with the Diesel Engine Works of Ghent, Belgium. He has been succeeded by Edward Van Linden, former factory manager of one of the Buick plants.

Edward Leach has been appointed district manager of the Willys-Overland Co. for the State of Washington and British Columbia, with headquarters in Seattle. Previously Leach was connected with the H. L. Olive Co. of Spokane, which handles the Overland car in that vicinity.

E. E. Gregg, for three years sales manager of the Penn Motor Car Co. of New Castle, Pa., which recently became financially involved, has been appointed assistant sales manager of the Michigan Motor Car Co.'s branch in Pittsburgh. His territory embraces 10 States.

A. Gale Thompson, who for 16 years has represented the Jos. Dixon Crucible Co., of Jersey City, on the Pacific Coast, has been made sales manager for that company's automobile department in the East. His appointment carries with it the establishment of headquarters in New York City.

E. A. Nelson, chief engineer of the Hupp Motor Car Co. of Detroit, has relinquished the active duties of that office and assumed the title of consulting engineer. His assistant, F. E. Watts, became chief engineer. Don T. Hastings, a former Packard man, succeeds to the title assistant chief engineer.

Paul D. Beach, manager of the Kelly-Springfield Tire Co.'s New England branch, has been transferred to Los Angeles, where he will have charge of the company's depot in that city. The vacancy in Boston caused by his transfer has been filled by the appointment of Warren T. Walker, who for several years was identified with the Locomobile company.

Having concluded his work as director of advertising for the General Motors Co., F. W. Kurtz has resumed his connection with N. W. Ayer & Son advertising agency in Philadelphia, with which he had been associated for 12 years prior to his removal to Detroit. Each of the constituents of the General Motors Co., as already is well known, is now maintaining an advertising department of its own.

Russell T. Kingsford has resigned his connection with the Peerless Motor Car Co. to become chief engineer of the Rushmore Dynamo Works, Plainfield, N. J. Kingsford graduated in 1896 from Stephens Institute as electrical engineer, and for a number of years was associated with S. W. Rushmore at the time the latter was building large multi-voltage dynamos for street lighting and metallurgical work.

Due to the promotion of J. Wilbur Hobbs to the management of the Goodyear Tire & Rubber Co.'s branch in New York City. H. H. Mundy, previously in charge of the Syracuse branch, has been appointed district manager with headquarters in Buffalo. C. E. DeVire becoming local manager of the branch. The vacancy in Syracuse caused by Mundy's elevation has been filled by the appointment of W. C. Blake. of the Goodyear traveling staff.

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In the RETAIL WORLD

Roche & Schooler are building a garage and machine shop in Winnemucca, Nev.

Henry Danhoff is about to open a garage in Cadillac, Mich.

S. G. Garrett is erecting a garage in Wallace, Ida. He is a Cole dealer.

I. Hoffman, of Parkersburg, Ia., is about to construct a garage, 40 x 66 feet.

The Whiteacre Automobile Co., of Wellsville, O., is building a new garage.

The Smith Auto Co., of Bishop, Cal., has let the contract for a new garage.

The Dahlen Auto Co. just has completed a new garage in Walla Walla, Wash.

Benjamin Spagnoli is about to build a garage, 36 x 112 feet, in Richmond, Cal.

Charles H. Abbott is about to build a garage in Troy, N. Y., near Second avenue.

George F. Robin has taken over the Water Street Garage in Port Huron, Mich.

C. W. Meeker is building a garage and machine shop on Bridge street, Union, N. Y.

Daniel R. Schnabel is about to establish salesrooms and a repair shop in Johnstown, Pa.

John Curtis has purchased the stock and business of the Eureka Auto Co., in Lone Tree, Ia.

The Highland Garage, in San Bernardino, Cal., has been purchased by A. A. True and N. Levering.

W. J. Caughey has opened a garage in Atchison, Kan. He also has secured the Ford agency.

McGreane, McGrath & Cline is the style of a new firm in Darlington, Wis. It has the R. C. H. line.

G. H. Kuiper has opened a garage in Grand Rapids, Mich., at Grand avenue and Michigan street.

George Middleton and C. C. Wilson have purchased the Algona Auto Garage in Emmetsburg, Ia.

Herman Von Engein is building a garage, 60 x 30 feet, in Beecher, Ill. It is located on Chicago road.

The Wood Garage, in Niles, Mich., has been leased by Bert Ringler, who will continue the business.

W. G. Flumerfelt and A. D. Mathven, of Detroit, have taken over the Monroe (Mich.) Garage Co.

S. L. Post is preparing to build a garage on Fourth street, San Antonio, Tex. The estimated cost is $2,500.

The Rose City Automobile Co. has been formed to take over the United Motor Newcastle Co., of Newcastle, Ind.

Harry Orr and O. H. Fox of Bartlett, Tex., have taken over the garage formerly operated by J. W. Hightower.

W. E. Callis, John Shaw and Tustin Nicoles are the proprietors of a garage which is being erected in Lompoc, Cal.

J. A. Ireton, of Lima, O., has secured permission to build a garage; the application names $4,300 as the cost.

Joseph H. Grandey is building a garage, 48 x 100 feet, in Grandvue, Pa. He has the Ford agency for Beaver county.

Charles K. Smith is about to build a garage in Philadelphia, Pa., at 9210 Germantown avenue; it will cost $4,500.

The Blackhawk Auto Co., of Waterloo, Ia., is building a new garage; it will be ready for occupancy December 1.

Corning, Cal., is soon to have a new garage; J. B. Beaumont, C. M. Kingsley and Floyd Beaumont will operate it.

Roy Maddrell has disposed of his interest in the Hokanson Auto Co., in Monroe, Wis.; he will enter other business.

A garage is about to be erected by Andrew M. Eastwick on North avenue, Baltimore, Md. The cost wil be $5,000.

C. A. Muller has established an automobile livery service in Berkeley, Cal. He also is proprietor of The Tire Shop.

The Birmingham (Ala.) Motor Co. plans to erect a garage, 140 x 100 feet, at Avenue C and 21st street; it will cost $10,000.

Googins & McNeill, who recently took over the McBride Garage in Walla Walla, Wash., are about to erect a new garage.

The W. L. Nolan Auto Co., of Rochester, Minn., has taken over the garage of W. H. Brown; the building will be remodeled.

P. R. Smith and T. S. Fenlon have taken over the Overland agency in Neola, Ia. It formerly was conducted by Joseph Barrier & Son.

Lee Rockwell asd L. D. Van Hof have opened the West Side Garage in Grand Rapids, Mich., at West Bridge and Scribner streets.

E. E. Gerlinger, of Portland, Ore., has entered the truck selling field; he represents the Standard line in Washington, Idaho and Oregon.

A new garage now being constructed in Springfield, Tenn., will be occupied by Dolen & Lewis when completed; the cost will be $6,000.

J. J. Carson is about to build a garage, 45 x 100 feet, in Lima, O. He recently secured the Mitchell and Paige-Detroit agencies.

Mackemer & Pinkerton, dealers in Peoria, Ill., are about to establish a branch in Galesburg, in the same State; they have the Ford line.

J. Harcleroad and Edward Bennett, of Lancaster, Wis., have sold their garage to G. G. Horton & Son of Patch Grove, in the same State.

Charles Bemen & Sons, of Cincinnati, O., are about to open a branch of their garage; it will be located on Rockdale avenue and will cost $10,000.

Perry M. Wolford and John Newman have organized the Piqua (O.) Taxicab Co. Wolford is president and secretary and Newman treasurer.

Owens & Work, formerly of Denver, Col., are about to enter the garage trade in Pomona, Cal. They have secured a location on Thomas street.

Permission has been granted to H. G. Scheldon of Allentown, Pa., for the erection of a one-story, brick garage at 11th and Maple streets.

Following a change in personnel, the title of the garage firm of Dann & Townsend, in Evansville, Wis., has been changed to Townsend & Hayne.

T. A. Jewell, of Norwich, N. Y., has gone into the retail automobile business; he is representing the Mitchell, R. C. H., Paterson and Moyer cars.

Permission has been granted to George P. Fisher to erect a garage, 36 x 50 feet, on Newberry street, Williamsport, Pa. The estimated cost is $2,000.

Centre Avenue Garage is the style of a new business in Reading, Pa. It is located at 934-36 Rose street and contains 8,000 square feet of floor space.

A. J. Lewis has sold his interest in the Alliance Motor & Supply Co., of Alliance,

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O., to his partner, John F. Brannan; Lewis has removed to Clevelend.

Onsgard & Foss, Ford dealers in Spring Grove, Minn., have dissolved partnership; Oliver Onsgard retires and Edward Foss will continue the business.

Frank Funda of Schenectady, N. Y., has entered the trade and has located salesrooms on Church street; he has the Studebaker and Haynes agencies.

The Adams Garage, 306 Franklin street, Natchez, Miss., has been purchased by the Motor Repair Exchange; both will be combined at the Adams location.

The Hunter Motor Co. has opened up new salesrooms in Roanoke, Va., at Henry street and Luck avenue; the company carries Haynes and Regal cars.

B. F. Ellington has bought out his partner, C. C. Tanner, in the Northwest Auto Co., of St. Joseph, Mo. The concern will continue to handle Krit cars.

J. S. Brown of Redlands, Cal., is erecting a garage and machine shops at 346 Orange street; he will operate under the style Continental Garage and will stock several lines of cars.

George Saul has sold his interests in the Reinbeck Auto Co., of Grundy Center, Ia., to W. C. Runft; the remaining member is G. E. Hildebrand, who, with Runft, will enlarge the business.

Lynn C. Buxton, of 1226 South Olive street, Los Angeles, Cal., has admitted Arthur E. Childs to partnership; the new firm name is Buxton & Childs. The Moon agency is the firm's principal business.

J. O. Kendall and W. O. Connor, of Dallas, Tex., have let the contract for a two-story brick garage, 50 x 90 feet, to be erected on Commerce street; it will cost $15,000 and is scheduled to be completed February 1.

W. E. Sparks, who has conducted a Cutting agency at 825 South Olive street, Los Angeles, under the style Eastern Motor Car Co., has disposed of the business to George E. Kirkwood. Sparks contemplates an extended touring vacation.

A. W. Tyner, of Webster, and Frank Forbes and W. R. Bowen, of Aberdeen, both South Dakota towns, have formed the South Dakota Motor Car Co., with several dealerships in view; salesrooms will be conducted in Webster and Aberdeen.

Recent Losses by Fire.

Red Bank, N. J.—Charles E. Hendrickson, Front street, garage destroyed. Loss, not stated.

Chicago, Ill.—Nyberg Automobile Works, Inc., 2439 South Michigan avenue, gasolene explosion and fire; building damaged. Loss, $15,000

THEFT OF CHECK DOES NOT AVOID THE PAYMENT

Provided Paper Is Taken by Employe of Man to Whom Check Was Sent —Jury So Decides in New York Storage Case.

If a car owner sends a check to a garage keeper in payment of storage charges on the car, and if the checks are stolen by the bookeeper or some other employe of the garageman, the owner has paid the bill and cannot be held further responsible, according to the verdict rendered by a jury Monday last, 25th inst., in the Supreme Court for New York county.

In this instance, O. B. Thomas, an attorney, stored his car with the Belnord Automobile Storage & Supply Co. during the winter of 1910 and 1911 and sent a check each month in payment of his bill. In the spring he went to the garage to get his car, after having left it for some time in "dead" storage, and was informed that he owed for three months' storage. Thomas insisted he had sent checks in payment, but the garageman declared if such were the case they must have been stolen by the bookkeeper. Investigation showed this to be the case, the checks having returned to Thomas, endorsed and cashed by the employe.

Thomas replevined his car, but to establish the true ownership it then became necessary for him to sue the Belnord company for the vehicle and for damages for the time he had been prevented taking the automobile. The jury agreed with the car owner and, while Thomas will secure damages for the retention of his car, they will be more or less nominal, as he was without it but a short time.

Ham-Meix to Make Motor Starters.

The Ham-Meix Mfg. Co. of Indianapolis, Ind., which recently was incorporated under the laws of that State with an authorized capital of $150,000, has located in that city at West 11th street and Belt R. R., where it will take up the manufacture of motor starters and acetylene generators.

The incorporators, Harry W. Hamilton, Benjamin F. Meixall, Samuel B. Sutphin and Harold Taylor, all are Indianapolis men; Hamilton and Meixell, each of whom has given half his name to the company, are well known in automobile trade circles, having been connected with the industry for years. Sutphin is a large paper manufacturer and Taylor a well known attorney. The factory that has been secured has a floor space of 40,000 feet, and its capacity is said to be 300 complete lighting and starting outfits daily.

The starter which is to be manufactured is of the pressure type and is original in that it will utilize carbon dioxide which will be generated in a steel tank designed to be located on the rear of a car. A controlling valve regulates the pressure generated, the possible range of which is said to be from 5 to 500 pounds.

Jackson Agency in Trouble Over Notes.

Notes given to the Jackson Auto Sales Co. of Brooklyn by customers and others are the basis of two judgments filed this week in the New York county clerk's office by the Montauk Bank, the claim at trial having been that the Jackson company borrowed money from the bank on the notes and that the notes were not paid when due. The Jackson company and several individuals and endorsers are named as judgment debtors, as follows: Jackson Auto Sales Co. of Brooklyn, James E. Pearson and Bernard J. Roesler, Jr., $378.92; Jackson company, George V. Tonner, Ralph E. Hutcheson and James E. Pearson, $305.15. Pearson and Hutcheson are named as being connected with the company. The suits were tried in a municipal court in Brooklyn.

Lamb-Daniel Locates in Detroit.

Lamb-Daniel & Co. is the style of a new firm which has opened up in the Union Trust Building in Detroit as accessory manufacturers' representatives. Daniel at one time was connected with the service department of the Cartercar Co. and latterly with the Castle Lamp Co., while Lamb previously was a member of the Franklin Automobile Co.'s staff.

Frame Company Sues Palmer & Singer.

Alleging that the Palmer & Singer Mfg. Co., of Long Island City, N. Y., contracted for a number of frames and then declined to adhere to the contract, the Parish & Bingham Co., of Cleveland, O., is endeavoring to recover $7,000 in the Supreme Court for Kings County, Brooklyn. The Palmer & Singer company claims its action was justifiable and entered a defense.

Rubber Company a Judgment Debtor.

A claim of $168.92 for goods sold and delivered to the Central City Rubber Co. by the Noera Mfg. Co. of Waterbury, Conn., is the basis of a judgment filed this week in the New York county clerk's office by E. V. Harman & Co. The latter is a collection agency.

To further the sale of its trucks, the Universal Motor Truck Co., of Detroit, has adopted an installment plan. It, of course, requires a substantial first payment and complete payment within one year

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THE MOTOR WORLD

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R. G. BETTS, Managing Editor
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W. H. TRIPP, 1001 Ford Building, Detroit
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PUTTING AN EDGE ON THE "DULL SEASON."

More than ever is it apparent that the motor car has ceased wholly to be considered a fair weather vehicle. The increased use of closed cars has become so great that the trend of the times is plain to all who have eyes to see and brains to comprehend. Little more than a year ago the closed car was considered essentially a "town car," but its numerous appearance far from the city's crowded streets is ample evidence that it now is recognized as a vehicle for all-around use.

The demand this fall has been so heavy as to embarrass not a few of the manufacturers who failed correctly to gauge the indications. One conspicuous and high-priced manufacturer estimates that he is losing at least two orders each day because of his inability to fill the unlooked for demand, and in one other almost equally conspicuous instance the manufacturer has been so hard put to it that he actually has been seeking to repurchase closed cars from those of his dealers whose estimates have been borne out by the proportions of the demand.

It is fairly clear, however, that the demand has not been evenly spread, but it is equally clear that no manufacturer and no dealer longer can afford not to reckon with the closed car and to include it in their stocks. The old belief that sunshine and warm weather are necessary for the sale of motor cars fast is being dissipated, which is to say that no dealer who is alive to his opportunities has license to complain of idleness during the winter months.

Lacking closed cars, and as another means of promoting winter business, the convertible bodies that are available, afford abundant room for the exercise of real salesmanship. There are comparatively few owners of touring cars who will close their ears to the suggestion of such bodies if they are but properly presented to them, while the combination offers of closed and open bodies, the latter for spring deliveries, is being turned to advantage in several directions. In fact, the conditions are such that whoever is possessed of his wits easily is enabled to put an edge on what once was considered the dull season.

ACCESSORIES THAT ASSIST CAR SALES.

Although the time never may come when the accessories that constitute the equipment of a car will of themselves sell cars, the fact remains that the item of equipment now is being made so much of, that he who does not turn it to advantage is permitting good "ammunition" to go to waste.

In many cases, the names of many of the devices which go to make up the equipment list are better known than the names of the cars themselves. Nor is it difficult to understand why a particular accessory should have become better known than the name of the car upon which it is mounted. The manufacturer of the device has widely advertised it and built up a reputation, and because it is a good device the manufacturer of the car and the dealer also advertise it—if they are wise—for they realize that in linking the name of a well-known and well-tried product with the name of their car a certain prestige thereby is added to the car. The automobile buying public has come to know that certain accessories have made names for themselves and it is but a step further to attach real importance to a car that carries one or more meritorious devices.

Horns and lamps and electric lighting systems and starters and a hundred and one other items of equipment which not so very long ago were listed as "extras"—all these serve as cases in point.

SIDE LIGHT GLARE SHOULD BE DIMMED.

The blinding white glare of the modern automobile headlight, with its often dangerous effects, has been eliminated from urban thoroughfares by ordinances calling for the softening of the lights within city limits, and this source of annoyance to other users of the streets has been practically brought to an end.

A new condition of the same class has arisen, however, with the growing use of very brilliant side lights, in which incandescent electric lamps with tungsten or other metallic filaments furnish the illumination. The sharp, brilliant points of light, backed by highly efficient reflectors, are almost as dazzling at short range as the larger headlights, and are further objectionable because in many cases the light is projected to both sides as well as ahead.

While the powers that be have not as yet cast officially disapproving eyes on this new and growing cause of annoyance—if nothing worse—it is unlikely that their inactivity in the matter will continue indefinitely, and it will be to the credit of lamp or car manufacturers if the remedy is applied, by frosting the bulbs or otherwise, before compulsory measures are adopted.

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PLAN PAID OFFICERS AND PERMANENT HEADQUARTERS

New York City's Motor Truck Club to Broaden its Scope—Some of the Projects Under Consideration.

Having served a useful purpose for some time, in that it permitted its members to foregather at the dinner table preceding informal discussions concerning a great many phases of the commercial vehicle industry, the Motor Truck Club of New York City, at length is preparing to serve an even more useful purpose, steps having been taken at the last meeting which occurred on Wednesday evening, November 20th, to obtain permanent headquarters and to maintain a salaried staff to care for the club's business.

Heretofore, club members have met in a corner of the dining room of the Hotel Cumberland, though the quarters have not proven all that could be desired. Hereafter, however, they will meet at the new headquarters which have been established at 1485 Broadway in connection with George Rector's hostelry, where members will be encouraged to dine daily at the "round table." Following an informal dinner, the first business transacted at the last monthly meeting was the splitting of the position of secretary-treasurer, Charles E. Stone, who has held that position in the past, being made treasurer and Ellis L. Howland, automobile editor of the Journal of Commerce, being made secretary. As soon as possible, the new office of the club will be opened and equipped for the collection of data and material pertaining to commercial vehicles.

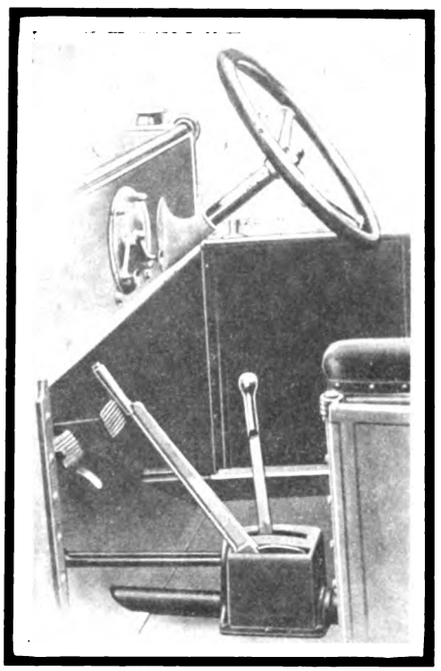
Among other things, it was suggested that a club bulletin be published, that a bureau of information be established, that a registry of motor truck drivers be kept, that a committee on contests be named for the purpose of gaining publicity through the medium of competitive events of various kinds and that the alteration of the annual truck parade to a mammoth demonstration be considered.

Price of "Petrol" May Cause Strike.

Taxicab chauffeurs in the city of London, who some time ago struck because of a difference with their employers over matters of remuneration, are on the verge of another walkout owing to the advanced price of "petrol." According to the custom in London, the chauffeurs are required to pay for whatever fuel they use while running the cabs, and as the price of gasolene has advanced about 70 per cent., the income of the drivers has undergone a considerable shrinkage. The average wage now is said to be about $3.90 a week, exclusive of "extras," of course.

Little Known Features of Well Known Cars

Probably no feature of a car is more important than the location of the control elements and no little time and forethought have been expended in the search for relative positions of the levers so as to render them effectual and reduce driving fatigue to a minimum. For a not inconsiderable time



HUPMOBILE CONTROL ELEMENTS

the top of the steering post location for the spark control lever and the throttle lever has been considered ideal, and if the added expense which attaches to the build-building up of the steering column is not sidered, the location certainly leaves little to be desired.

The advent of cars that really are worth while at prices which are reasonable, discloses many ways and means by which production costs are cut, and one of these means, one which is in evidence on the Hupmobile, is to change the orthodox location of the spark and gas levers to a dash location, whereby the steering column is shorn of rotatable sleeves and attachments and becomes a simple piece of shafting bearing the wheel. But though the more usual location does not obtain, the levers are positioned where they are readily accessible; on a cowl board supported by the dash and within easy reach of the driver, as shown by the accompanying illustration. The levers operate on a brass plate which serves to designate their respective functions.



November 26-30, Grand Rapids, Mich.—Fourth annual show of the Grand Rapids Automobile Dealers' Association in the Klingman Exposition Building.

December 2-3, Chicago, Ill.—Annual meeting of the American Automobile Association in Auditorium.

December 7-22, Paris, France—Paris Salon.

January 4-11, Montreal, Can.—Annual automobile show in the Drill Hall and Armory, under the auspices of the Automobile Club of Canada.

January 6-11, Cleveland, Ohio—Cleveland Automobile Show Co.'s exhibit in the Central Armory.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, Philadelphia, Pa.—Philadelphia Automobile Trade Association's exhibit in the First and Third Regiment Armories.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

January 27-February 1, Detroit, Mich.—Detroit Automobile Dealers' Association's Show in the State Armory.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

February 10-15, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Commercial vehicles only.

February 10-15, Minneapolis, Minn.—Minneapolis Automobile Show Co.'s show in the National Guard Armory.

February 17-22, Kansas City, Mo.—Kansas City Automobile Dealers' Association's show in Convention Hall.

March 3-8, Pittsburgh, Pa.—Pittsburgh Automobile Dealers' Association's show in Duquesne Garden.

March 24-29, Indianapolis, Ind.—Indianapolis Automobile Trade Association's show.

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Solutions of The Used Car Problem

In Competition for Motor World's Cash Premiums of $50, $25, $15 and $10 for the Four Best Articles Dealing With the Subject.

By JOHN B. ORMAN, Indianapolis, Ind.

Ebenezer Carwise has an old automobile of the vintage of 1906 or thereabouts which Ebenezer Jr. says is quite impossible. The original price paid for the 1906 model was $1,500, but the Carwise family is in the market for something bigger and better—a high-powered, roomy, comfortable kind of a car costing possibly between $2,000 and $4,000.

Ebenezer knows his old boat is not worth more than $350, but he knows that the dealer is anxious to make a sale and therefore he carefully figures out that he should get an allowance for his old cast-off car equal to the original cost. The first Live Dealer who totes the Carwise family on numerous demonstrations may balk at these terms, but if he does so, old Ebenezer goes on a still hunt for the class of dealer who will stand for a little loss—and eventually he makes his trade.

Ebenezer Carwise has a new car and is ahead of the game, while the dealer, in his anxiety to make a sale, has moved a little nearer the bankruptcy court. This, in a vague, general way, is the sad tale of the automobile salesman in today's battle for supremacy in automobile auction.

Trading is a vital problem to every person interested in the automobile industry. For there will be trading always in the marketing of motor cars, just as there always has been in every other commodity where the investment is heavy and the changes frequent. The retailer may as well try to realize that fact now as well as at any other time and act accordingly. Trading will diminish on smaller cars, but will increase on the higher class cars, as there are naturally many more small cars sold to beginners who eventually want to possess larger and more powerful cars.

Some firms are meeting the proposition by placing exorbitant prices on their product for the sole purpose of making unheard of allowances for the used car. By this method, which is manifestly unfair to the man buying his first car, the manufacturer and the dealer get the actual value of the new car in the cash difference, so that the traded in car stands them nothing. This plan borders so closely on misrepresentation that it never will become popular practice.

Another attempted solution is that adopted by one of the large builders of a particularly sturdy, high class car, made in Indianapolis. This plan consists of the rebuilding of all their own makes which are traded in during the season into commercial wagons. This plan so far has proved very successful, but the changes necessary in making a pleasure car into a commercial wagon are many and require a good sized plant as well as considerable expense for operation. This would eliminate the plan as unprofitable for the average dealer, who has neither a plant at his disposal nor the inclination to shoulder the expense necessary in rebuilding and reselling.

With all the conditions clearly outlined, it seems as though the only sane possible solution of the difficulty is for the legitimate dealers of every community to get together and regulate the course of the used car. No more should be allowed for a car than can be gotten for it on a resale. It is an easy matter to put values on used cars, as every dealer knows, even almost to the dollar, what any used car will bring, when put on the market.

Now, while on the threshhold of a new and promising selling season, is the time for every live dealer in every city and town in the country to call together those who have the good of the automobile business at heart and find a way to guide the growth of that already husky little infant called "Trading."

By ERNEST WARREN, Wakefield, Ill.

The used car problem is encountered by every dealer in the United States, and the dealer's success depends upon a number of obstacles being overcome, the most important being the price allowed for the old car and the amount and character of territory available for its disposal.

It appears that the dealer in the cities of from 10,000 up can not dispose of used cars as successfully as the dealer in the smaller towns, which is due to the fact that the rural district will buy and use more used cars; especially is this true of cars from $1,500 down, and there are probably more of such cars for sale than of those listing at larger figures.

The used car dealers in the cities dispose of a great number of cars, but only a small part of them reach the rural districts, and the few that do so leave the buyer and all his friends in a frame of mind not calculated to induce future sales, as these cars are generally in poor shape.

I know a man who bought a used car of a very popular make and had it shipped to his address, and he was over a week getting the thing started; another person purchased a used car and it almost fell to pieces after 300 miles; it has never been started since. Again, I had a call for a cheap used speedometer and asked one of the largest dealers of used cars in St. Louis for a model 26 used Stewart speedometer, and after a while they found an old used model 24, for which they only wanted $19. These are fair instances of daily happenings, and as long as there is no better method so long will the rural districts hold aloof from the used car.

It seems to me, however, that the evil reputation of used cars could be removed and the situation relieved if a system could be worked out whereby all the legitimate dealers in a state would employ a competent man to oversee the sales of used cars, which they take in trade for new ones. This man could, by requiring a weekly card from all dealers, giving make, year, condition, price, etc., of each car, keep an accurate record of all and by good advertising could attract purchasers whose inquiries could be referred to the nearest dealer having the kind of car wanted. This man could also write to the prospect, telling him where he could find the kind of car we wanted, with the name of dealer and the price set on the car.

A dealer's first duty to himself is selling new cars, but there are times when dealers in small towns could co-operate with the state man and find places for many used cars, and while he would not make much profit, he would relieve the situation and incidentally sell more oils, greases and gasolene.

I do not believe that used cars placed in rural districts keep new cars from selling, for if they are sold right and are in good running order when sold, they will sell other cars; but they must be sold on the square, and inasmuch as the average rural district does not buy high priced new cars, why not provide a plan whereby the numerous used cars can be distributed beyond the present selling territory?

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WHEREIN "AUTOMOBILE ROWS" ARE SADLY LACKING

The most striking feature of "automobile row" on Michigan Boulevard, Chicago, is the absence of real window displays. One can see scores of imposing stores handsomely and luxuriously furnished, but most of the managers and dealers overlook the window display opportunities.

Few Windows Reach for Business.

Chicago is a city celebrated for the enterprise of its merchants and their all-round aggressiveness, and because of the fact, the visitor believes that there will be found some of the most interesting and attractive window displays in the country. But he departs with the impression of having seen many beautiful and effective exteriors and promises of interior lavishness—handsome, polished plate glass windows on every side, parquetry floors, tiled floors, potted plants and flowers in the windows—but few real window displays that reach out for business.

Two of the most effective and business-like showings are those of the Rambler branch and the Inter-State and Paige-Detroit agencies.

Study from Standpoint of Outsider.

Chicago automobile dealers would do well to study their store fronts from the standpoint of the outsider and see how much added selling effectiveness can be put into window space. And what is true of Chicago, comes near to being true of New York and every other city large enough to be possessed of an "automobile row."

The more aggressively business is gone after and the more business-like and tempting the displays of cars the more surely will business be attracted and the less likely will be the observant customer to wonder how much of the store luxury and refinement he is expected to pay for when he buys a car.

The competition of real value is here now and those who face the issue clearly and squarely will reap the handsomest profits.

SALESMANSHIP OF THE CONVINCING SORT.

"That salesman is a crackerjack!" said a Cincinnati motorist after an interview with an automobile salesman. "He is such a plain, friendly, to-the-point talker. He does not worry about his competitors. He makes a point and rams it home. Then he makes another point and rams it home. Cleans up all along the line. Makes you fairly come along with him. Asks you questions once in a while to which you have absolutely got to say "yes" and leaves you no possible loophole for escape, and be honest with yourself.

Frankness as Oppposed to "Hot Air."

"I like him; his sincerity and business-like methods of talking have completely won me over. I am convinced that his car is just as good as he says it is, and I am going to give him the order. He did not ask for it—just said he wanted me to know about his car so I could make up my own mind, and then left in a friendly, frank sort of way. It's a wonder there are not more salesmen like him."

The honesty of purpose and apparent integrity and sincerity of the salesman had won him a customer. No "hot air." Simply plain statements that he could back up, and an appeal to the man's own judgment. Such methods rarely fail to appeal and generally win.

RESPONSIBILITIES OF EMPLOYER AND EMPLOYE.

It is not only proverbial but almost an axiom that the employe who serves his employer faithfully, honestly and intelligently is sure of advancement.

The dealer will win success by the same line of action. In a sense he is an employe of the great public; it is up to him to serve the public faithfully, honestly and intelligently. If he does so, results are certain.

There is a difference, however—and it is often this difference that causes the trouble. The employe has to be responsible only for his own acts. The employer is judged not only by what he himself does, but also by what his employes do. He has two chances or more to fall where the empolye has but one.

All of which means that the employer has not completely discharged his duty to the public when he himself has measured up to the standards He has only begun. He still has the responsibility for the acts of his employes, and that means he must see that they either measure up to his standards or get off the job. This means educating employes, and teaching them the fundamentals of business. Like many other things, it takes nothing but time and brains and brings big returns.

LOOK AT THINGS FROM THE OUTSIDE.

One of the best things an automobile dealer can do is to occasionally go out and view his establishment from the standpoint of an outsider.

Would you be satisfied and pleased with its appearance, with the way things are handled, with the treatment that is accorded? What can you do further to improve conditions?

SELLING PRICES, NOT CARS.

"They are selling prices, not cars, in that town," was the apt language in which a manager summed up a price-cutting situation. It is language that should be generally taken to heart. When merchants begin trading in figures and not in values or merchandise the end is not far removed.

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AWAKE NDISING WORLD

GROWING NECESSITY FOR FIRST CLASS REPAIR SHOPS.

"Enterprise is a habit," says James Mott Wooley in the Saturday Evening Post. It is only another way of saying that the man who recognizes one opportunity is likely to know another when he sees it. Which suggests the thought that man sees only what he is trained to see. There are some things too small for the human eye to perceive; there are other things too large. There are sounds so faint we cannot hear them. There are opportunities, both small and great, in merchandising. Some men are both deaf and blind, but the man with the merchandising mind both hears and sees the opportunity and welcomes it.

Attributes of First Class Shops.

Among the opportunities that are worth heeding is the opportunity to establish first class automobile repair shops. In nearly every city there is a need for at least one such institution, operated independently from any garage; with workmen so good, supervision so competent and service and prices so consistent that every customer becomes a booster.

It requires not only these attributes, but brains, and first class equipment. It requires a place large enough to store a dozen cars; light enough to do good work. In a word, what is needed is a place where not only minor repairs but the big jobs, like overhauling and rebuilding cars—putting shaft drive axles in place of chain drive—and other important repairs can be made.

There will be a great deal more of such work than there has been, and it naturally can not and will not go to the factories because there will not be room there, and besides, there is little money in it for them, equipped as they are specially for building but not for repairing.

In many towns there are shops the entire effort of which is confined to a particular make of cars. If the car is not the brand the owners sell they will do nothing for it, and with increasing sales this condition will inevitably become more widespread. It creates a money making opportunity too big to be long overlooked.

OPPORTUNITIES FOR THE "NEIGHBORHOOD" GARAGEMAN.

In most large cities there are "neighborhood" garages—that is, garages situated in the residence section and the principal business of which is storing cars, selling gasolene and oil and doing odd repair jobs for the motorists in the neighborhood who have their own garages.

The man who keeps his car in his own garage does not usually do so because of its cheapness. He does it because of its evident convenience. If he owns his own home it is natural for him to erect a private garage.

Needs of Private Garage Owners.

During the season this type of owner is more likely than not to get well acquainted with the "neighborhood" garage. Equally likely, he opens a charge account, which offers the opportunity for the garageman to display his merchandising spirit. Why not sell this man all his oil, all his gasolene? Deliver it to him, if he wishes it, at his own garage, but why not sell him and make a profit?

The oil companies are selling hundreds—yes, thousands—of such individual owners. There is absolutely nothing to prevent the garageman from getting the business. With it he can build up his own volume and reduce his own costs. All he has to do is to reach the man by letter or 'phone, or personally when he is in the garage, and explain to him that "prices are right—quality guaranteed," and so forth.

There may be a cent or two difference per gallon in favor of the oil company, but if the private owner is using your free air and other facilities it will not take much work to get him in line. Why not have this business? Why not offer to sell him tires? In other words, why not start to build up a strong connection that will mean permanent business relations and permanent profits?

DISPLAYING CLOSED CARS TO THE BEST ADVANTAGE.

Giving goods every opportunity to sell themselves is one of the things that has been highly developed in the most successful retailing businesses and in this connection many automobile dealers overlook an important item in the displaying of cars, for a car, so shown that the prospective buyer's interest is aroused, has done much to sell itself.

The principle at this time of year may well be applied to the closed cars which are to be seen in many show windows. Every salesman knows that the luxuriousness of a limousine is one of its selling points and one which particularly impresses womankind but which is not apparent to the casual observer. This almost paramount feature of this type of car can be made to attract the passerby if the door of the limousine is swung open, exposing the comfortable and rich upholstery. If the light is not sufficient the turning on of a dome light in the car also will greatly help. Few things present a cozier appearance then the interior of a limousine when illuminated.

SOME WIDE-AWAKE MAXIMS.

Would you have your profits grow? Then make your sales grow.

Manufacturers are looking for live dealers; the better their line the more they need live ones.

Haste usually makes waste in the repair shop; lack of competent inspection is its twin brother. Together they are prolific sources of disputes, extra labor, overcharges and disgruntled customers.

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COMBINES WICK AND SPRAY PRINCIPLES TO ADVANTAGE

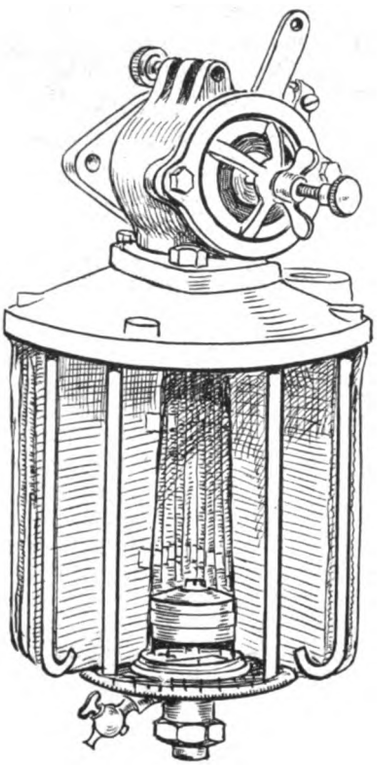
New Old Carburetter that Delivers "Dry Gas" and Thereby Saves "50 to 100 Per Cent."—Much Ingenuity Involved.

In appreciation of the fact that in principle the wick type of carburetter, which a few years ago was in considerable vogue, is not as good as the orthodox float feed spray type and that even the latter is not quite as perfect as it might be, the Triple Action Carburetor Co., of 711 East 11th street, New York City, has set about to correct the faults of both by the simple expedient of ingeniously combining the good principles of both in a single instrument. And so successful is the resulting device, it is claimed, that a saving of fuel of from 50 to 100 per cent. is not only possible but actual, and to back up the argument the company is offering to install carburetters under a contract whereby the recipient agrees to pay for them a monthly rental fee equivalent to one-half the amount actually saved on fuel bills. Unfortunately, however, there are no Triple Action carburetters on the market yet of a size suitable for automobile use, though it is hoped before long to supply them in all sizes. For the present, the manufacturers are confining their efforts strictly to the production of large sized models—3-inch inlets—suitable for use on heavy duty marine or tractor engines, but the smaller sizes are in hand and will be forthcoming in due course.

The device itself is not brand new in conception, but does not lack real interest because of the fact. It appeared in its original form some three years ago, but since then it has been very materially improved. Incidentally, the improvement has changed its shape from rectangular to cylindrical, as it shown by the accompanying illustration. The principal claim for the device, of course, is that it effects an actual saving of at least 50 per cent. in the amount of fuel ordinarily consumed, other claims being that it provides an absolutely dry gas, that it materially increases the power output of the engine to which it is attached, that it is "foolproof," that it cannot be clogged up by dirt or sediment in the gasolene and that it will always start a cold engine quickly and easily.

In its simplest aspect, the Triple Action carburetter consists of a large number of fine brass tubes—between 80 and 100 in a carburetter of a size suitable for an automobile engine—arranged concentrically around a central hole or well and attached at their upper ends to brass plate which forms the bottom of a mixing chamber. Between each of the brass tubes there is a thin sheet of brass covered on both sides with felt. The lower ends of the brass tubes are "hooked" and the float, which is arranged in the central well, is set so that the fuel just covers the "hooked" ends of the brass tubes.

The efficiency of action of the carburetter depends to a great extent on the temperature of the air which is mixed with the fuel. Therefore only hot air is admitted The heated air passes only through the tiny brass tubes, and before finding entrance to



TRIPLE ACTION CARBURETTER SECTIONED

the mixing chamber at the top of the carburetter is forced to pass in a uniform quantity between the felt plates. It is because of this that the triple action takes place for which the device is named. The air first is carburetted as it bubbles through the layer of fuel over the "hooked" ends of the air tubes; it is more thoroughy impregnated with fuel by reason of the spraying action caused by the air rushing through the tiny orifices; and, last but not least, it becomes veritably saturated with fuel in passing through the gasolene laden felt plates. Which, briefly, explains the "triple action."

It is pointed out by the inventor, Mathias Weiwoda, that it is impossible for the carburetter to deliver other than the dryest of dry gas, for the reason that all globules of liquid fuel are arrested by the felt walls through which they must pass before the mixture of air and gasolene enters the mixing chamber at the top. Regardless of how slowly the engine is running, the air must always be thordoughly carburetter because it is forced to pass through the fuel, added to which the laws of capillary attraction ensure that the felts always will be saturated as long as there is fuel in the float chamber.

The mixture of hot air and fuel which collects in the mixing chamber naturally is too rich even to fire, and in order to thin it down to the proper proportion it is mixed with additional air by means of an adjustable throttle valve and a spring controlled auxiliary air valve. Both these valves are located at the top of the carburetter, where they are readily accessible. The former is so constructed that its opening always is in direct proportion to the opening of the throttle so that the mixture furnished the engine contains always the same fuel and air content. There is no needle valve in the device, its place being taken by an ordinary poppet valve controlled by the float. The whole device is enclosed in a cylindrical casing, which in the size suitable for an automobile engine of about 25 horsepower would measure approximately 5 x 5 inches over all dimensions. A tiny window is provided in the casing to permit a view of the float and the gasolene level, the former being easily removable without the necessity for disturbing anything other than the gasolene line connection.

Drain Hole That Should Be Clear.

Where spare tires are carried on the running board with the lower extremities inserted in a well, placed there for their retention, it is well to block up the tire slightly so that it will not prevent the escape of rain water through the drain hole in the bottom. It is also well to see that this drain hole is kept free from dirt, for moisture will in time rot the rubber.

Facilitating "Snipping" of Metals.

A piece of sheet metal that is thick enough to make cutting with snips a difficult matter can be carved up with comparative ease if one handle of the tool is held firmly in a vise and pressure applied to the other. Some snips are made with one handle shaped specially to facilitate being held in this way.

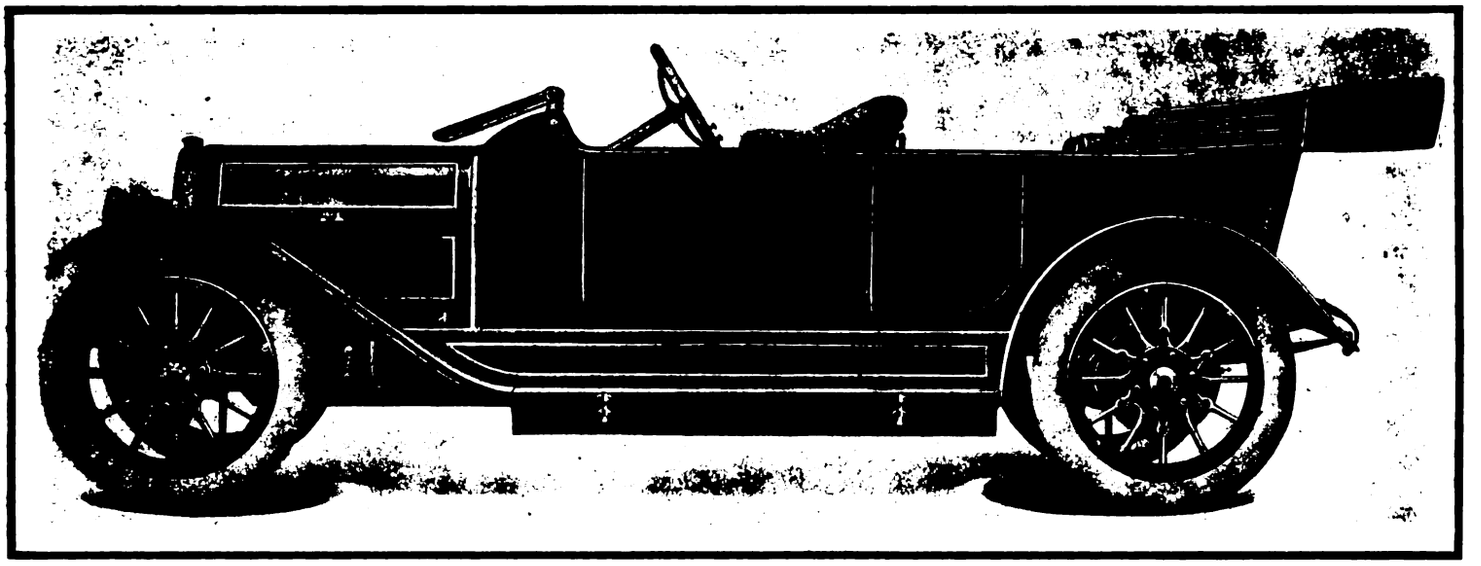
Oil that Aids Chipping of Metal.

When doing heavy chipping on wrought iron, steel, bronze or other tough, fibrous metals, the work will be considerably facilitated if a small wad of waste, soaked with heavy oil, is kept where the edge of the chisel can be frequently passed over it. The oil on the cutting edge makes the tool go in easier and cut faster.

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MICHIGAN LINE IS THOROUGHLY RECONSTRUCTED

Four-Speed Gearset in Which High Speed is an "Overstep" for the "40" and Cone Clutches for Both Among the Important Changes—Longer Wheelbases, 14-Inch Cushions and Electric Lighting Systems.



CLEAN CUT APPEARANCE OF LATEST MICHIGAN "40" WHICH SELLS COMPLETELY EQUIPPED FOR $1,585

Not content with half-way measures, the Michigan Motor Car Co. of Kalamazoo, Mich., has very nearly completely reconstructed the two chassis that go to make up the Michigan line. And in the reconstruction the adoption of a four-speed gearset with an indirect high gear for the "40" is only one of the new features, though it is one of the most important of the many, that serve to distinguish the newer series cars from their predecessors. Also, Michigan cars—both are "fours" and are rated at 40 and 33 horsepower—hereafter will be sold completely equipped even to a dynamo electric lighting system; engine starters of either the electric or acetylene type will be added at a slight additional cost. The price of the "40" has advanced $85 to $1,585 and the "33" now lists at $1,400 in both roadster and touring form, the previous prices for these models being $1,150 and $1,250, respectively.

The bore and stroke of both the motors remain the same, the figures being 4¼ x 5¼ and 4 1/16 x 4½, respectively. Nor has any material change in construction been made, both remaining of the block cast L-head type. An important change has been made in the lubrication system, however, whereby greater lubrication efficiency is obtained and the possibility of smoking even under the most adverse conditions is eliminated. The pump-over splash system which has been used in the past, oil being circulated into troughs beneath the connecting rods, whence it is splashed over the cylinder walls and thence returned to repeat the performance, is retained intact except that an oil lead has been added to lubricate the timing gear train, thus eliminating the grease packing. The lower groove of each piston ring is beveled and drilled so as to draw down the excess oil and convey it to the crankcase instead of encouraging it to mount into the combustion space. Piston pin bosses are drilled.

The distinctive arrangement of the intake and exhaust manifolds both on the same side, though either may be removed without the necessity for disturbing the other, is retained without change. The carburetter is a single jet device selected for efficiency in furnishing properly proportioned mixtures at all engine speeds. As heretofore, ignition is effected by means of a Briggs magneto operating a true dual system in conjunction with a set of dry cells. Cooling water is circulated by means of a centrifugal pump of the orthodox pattern and heat radiation is assisted by a cellular type radiator and a ball bearing mounted fan.

Differing from the general practice, the lighting generator is mounted on a special bracket suspended from the two cross frame members that serve to support the gearset and is driven by means of a "silent" chain from the drive shaft flange. In the arrangement, provision is made for the adjustment of the chain for wear, and the whole mechanism can be taken out or disconnected temporarily quite easily. The system operates on a three-wire 16-volt circuit, the storage battery being split into two units to provide a lighting circuit of 8 volts with load balanced on the two sides of the accumulator unit. Unless otherwise specified, regular equipment includes the Vesta lighting system, specification of the electric starter in addition increasing the cost of the complete car $125.

In the transmission elements of the "40" two important alterations have been made. The first of them is the substitution of a large diameter leather faced cone clutch for the multiple disc clutch that has been used in the past—the "33" also has a cone clutch in place of a multiple disk clutch—and the other is the substitution of a four-speed selectively operated change gear mechanism for the three-speed gear previously used; in the "33," the three-speed gear is retained. In changing over from three speeds to four, cognizance has been taken of the fact that it often is desirable to run for lengthy periods on high gear and that under normal conditions such as obtain with the ordinary four-speed gearset not all the power of the engine is required, though excessive engine speed often is necessary in order to maintain a fairly high average touring speed. To obviate this

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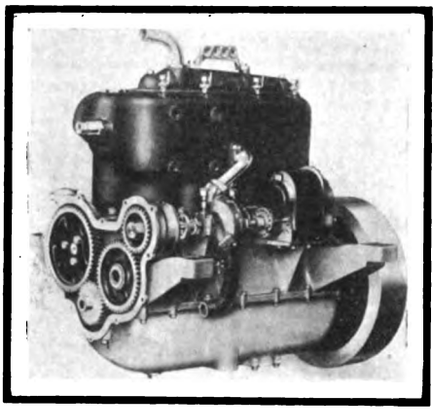
trouble the high gear in the Michigan gearset has been made an "overstep." That is to say, direct drive is obtained on the third speed and the fourth speed represents a higher gear ratio than is practicable with moderate power on direct drive. Incidentally, the four-speed gearset of this type generally is conceded to permit a better ratio of progression in speed changing than does the three-speed or ordinary four-speed gearset. Gears, of course, are carefully heat-treated and are proportioned to afford an ample factor of safety. The shafts run in imported annular ball bearings. By reason of the location of the selector fingers, central positioning of the gear shift lever is simplified. Both cars are controlled from the left side with the control levers in the center of the foot board.

The front axles of both the cars have been redesigned and are now a deep I-beam section with spindles of extra size. New practice is evident in the method employed to lubricate the spindle bolts and cross rod bolts. Ordinarily the spindles are drilled longitudinally, but under the new Michigan method they are drilled from the side, providing a method of forcing the grease upward and downward without the danger of weakening the spindles. Incidentally, the dirt which under ordinary conditions tends to work in, tends to work out under the new construction.

The rear axle of the "33" model is of the three-quarter floating type, change from the semi-floating type having been made by reason of the fact that tests tended to prove the greater efficiency of the former. In the "40," a change has been made from there-quarter to full-floating for the same reason. The casing of the axle in the larger car is formed of 3/16-inch hot-rolled sheet steel autogenously welded at the center. It is reinforced internally by tubes which carry the wheel bearings and extend through the main housing to a point as near the differential as is practicable. Here they are supported by elliptic plates embracing the wheel bearing tubes and extending to the main housing walls, to which they are welded.

Easy adjustment of the lateral location of the differential and main driving gear is obtained by two slotted nuts threaded on the differential cases and locked by claw dogs engaging the slots in the peripheries of the nuts and retained by cotter keys. Two sets of brakes are provided on both cars, service brakes being internal expanding and operating on 16 x 2½ inch drums in the case of the larger car and on 14 x 2 inch drums in the "33." In both cases substantial increases in dimensions have been made. Emergency brakes are external contracting.

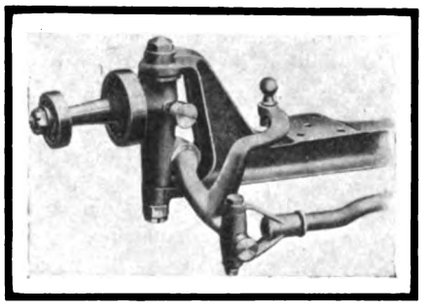
The wheelbases of both the cars have been increased, the increase in the size of the "40" being two inches to 114 inches. With the increase in wheelbase length there has come also an increase in tire sizes, the "40" being equipped with 35 x 4½ inch tires instead of 34 x 4, and the "33" being equipped with 34 x 4 instead of 34 x 3½.



MICHIGAN "40" BLOCK MOTOR

In both cases, tires are mounted on Firestone demountable quick-detachable rims. Standard equipment includes one extra rim and the irons to carry it.

To the standard equipment of both cars, formerly consisting of horn, tools, demountable rims, foot and robe rails, there has been added an electric lighting system, mohair top with envelope and side curtains, electric horn, glass windshield, Jones speedometer, and tire irons. Either acetylene gas or electric engine starters will be fitted to either chassis at an increase in cost of $20 and $125, respectively.



MICHIGAN SPINDLE LUBRICATION

In the general mechanical reconstruction which has been made, the comfort of passengers has not been overlooked, as the adoption of upholstery no less than 14 inches in thickness would tend to make plain. The cushions are of the Turkish type which within a comparatively short time has sprung into such prominence Front springs are of the semi-elliptic type and rear members are three-quarter elliptic. Bodies have been refined in outline, of course, and present a modish straight line effect well set off by careful paint work and nickel plated trimmings. Running boards have been cleared by placing the tools in compartments beneath them, and the side lamps have been embedded in the dash, leaving no unsightly projections to mar appearance or to catch in the clothing of the passengers.

Receiver Named to Protect Two Trucks.

Despite the fact that the Motor Renting Co., which formerly was located at 502 West 45th street, New York City, is claimed to be no longer in business, a receiver was appointed for it in the New York City Court Monday of this week, 25th inst., upon the application of William M. Alberti, a judgment creditor. Alberti's judgment, secured October 4, is for $264.60, and he thought he was near to getting some satisfaction when he had Henry Schultz brought into court on supplementary proceedings as president of the company, but Schultz denied being more than an employe, so these proceedings were dropped.

Then an investigator looked into the Renting company's affairs and found that two motor trucks formerly in the possession of the judgment debtor were apparently abandoned in a garage on 108th street, near Columbus avenue, the wheels being missed from one and other parts in imminent danger of following, since the trucks were in an exposed place where a person of purloining disposition could pick up several parts with a few minutes' work. To protect the property and secure some form of adjustment the receiver was asked. The original claim was on promissory notes given in payment for two trucks, and the Motor Renting Co., now in the bankruptcy court, George Wishart and William H. Harrison.

Schultz's testimony in supplementary proceedings was brief and his most significant statement was that the concern for which he formerly worked is out of business.

To Prevent Round Drills Slipping.

A few longitudinal nicks with a cold-chisel will cure a round shanked drill of the habit of slipping in the chuck. The nicks need not be deep; they should, of course, grip the tool, care being taken that the drill is placed on a perfectly flat surface before it is nicked to obviate the possibility of breakage.

Hammering That Makes Brass Springy.

A strip of soft or annealed copper or brass can be rendered fairly springy by laying it upon a flat surface and hammering the entire surface of both sides with a light hammer. A spring made in this manner often will serve to replace a broken spring on a magneto circuit breaker for the time being.

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REILLY RECOMMENDS RESPECT FOR "FORMER JOBS"

Tells Sales Manager How One Loquacious Youth Lost Coveted Position Because He Belittled the Last Line of Cars He Had Sold—How a Mind Acts When It Listens to Adverse Criticism.

"Hey! Where you going?"

This peremptory summons and demand for information, had it been hurled into the ear of a nervous man or one who had reason to believe his presence might be highly desired in a town he was endeavoring to avoid probably would have brought about a near approach to heart failure; falling on the ears of Reilly, however, he doggedly declined even to notice it, and without even a start pushed his money under the iron grating of the railroad ticket office and withdrew a ticket for his home town, 30 miles down the main line.

Questions Yield Scant Information.

When he did turn, the whole episode being a matter of mere seconds, he saw the Sales Manager, grip in hand, stalking across the waiting room from the street door. This individual repeated his request for information as to Reilly's destination.

"Home; where'd you suppose I was going?" he answered. "Where are you going yourself?"

"Away from home. Where do you suppose?" was the retort.

"Very elucidating!" commented the dealer, as his factory sales manager passed in the money for a ticket to a town in the opposite direction from Reilly's home place.

"What are you doing here, anyway? And what do you mean by coming to town and not coming up to the factory?" demanded the Sales Manager, as the two strolled toward the station platform.

The Two Tradesmen "Talk Shop."

"Oh, I had a little business with one of your high-brow lawyers. I didn't have time to pay a visit to-day," vouchsafed Reilly.

On the platform, conversation drifted to trade in general, for when together both invariably "talked shop." The connection between the rapidly succeeding topics would have kept a psychologist several moves in the rear, and suddenly the Sales Manager remarked, "Hear you're going to have a new salesman."

"You do? Who is he?"

"Why, didn't you hire that man I sent down?" queried the man with the grip.

"Oh! that man!" laughed Reilly. "Where did you get him?"

"He dropped in one day looking for a job," explained the Sales Manager. "I didn't have anything for him, but had heard you say you might put on another man if business kept up, so I told him to try you. Didn't you like him?"

"Yes and no." was the dealer's slow and thoughtful response. "I suppose he might make good, but I don't believe I'll take him on."

"What's the matter with him?"

"I don't know that anything in particular ails him." replied Reilly, "but I formed a



THE TWO STROLLED TOWARD THE STATION PLATFORM

prejudice against him. It's a shameful thing to admit, but I did. It was because of something he did when I slipped him a little test. I set a trap and he fell into it."

"What ever did he do?" demanded the Sales Manager, almost in alarm.

Trap That Revealed Character.

"Nothing, except that he knocked the line of cars he used to sell. Your chap strolled in and asked about the position he understood I had open and I was quite well impressed with him at first. I really began to believe he could sell cars. In fact, I believe it yet. But just to get the measure of all sides of his character, I asked him about the dealer he said he used to work for, just to see what he would say. And you ought to have heard the things he said. He became deficient in language when he tried to say all he wanted to.

"I asked him if he liked it over there, and he began his tale of woe. According to this fellow his last employer is about the meanest piece of humanity that ever grew. Also, his line of cars is rotten; they are hard to sell, full of defects, give no service, are too high-priced for their construction, break down all the time, the boss is a cheat and a crook, he is mean to his help, he doesn't care anything about his trade except to get the money for the cars, and—— Butt, whew! There's no use in me trying to tell you; it's too much. Moreover, I haven't wind enough to tell it all in one breath, and life's too short to make more than one story of such a tale.

Talked Himself Out of a Position.

"After I listened to him for a while he began to drop in my estimation, and the more he talked the further and faster he dropped, until he was so far down I could hardly hear him. That young man just about talked himself out of a job. Hire him? Never! I would just as soon breed a snake under the cushion of my Morris chair. He wouldn't stay with me forever, probably, and do you suppose I want to turn him loose in the world to show up the defects of the Reilly family. Not on your life! The family's bad enough now, especially the old man, and I don't want any such little trouble maker buzzing around my neighborhood.

"That's a big mistake too many fellows make, Jim; they talk disparagingly of the last line of goods they handled. They can't say anything bad enough about it. They will use it in their sales talk. If they happened to be working on a prospect and the prospect mentions the line of cars they used to sell they begin their little anvil chorus and think it makes an impression. Sometimes it does—but generally it's the wrong impression.

"Knocking" and the Psychology Thereof.

"Did you ever stop to think how your mind really works when someone starts to run down something you don't know much about. You become eager to learn more about it, just to see if what the other fellow said is really so; and then when you find he was talking from a point of prejudice you sort of sympathize with the man or

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thing he knocked and are prejudiced against the knocker.

"I was taught that lesson when I was still a lad—and had hair. I was told not to emphasize the fault of goods I used to sell. Every line has what may be termed shortcomings. Often this line's salesmen, or so-called salesmen, become dissatisfied and quit. Then they consider that they have thrown off a yoke of thralldom, begin to picture the horrors of their previous condition of servitude and look for a 'perfect' line.

Reasons May Lie Back of Faults.

"If they only knew what lay back of the things they objected to they might be different. Maybe to remedy some fault would result in a greater one. Maybe the engineers have spent years on some one point. And if they only knew anything at all they wouldn't criticize so much, for the man who paid their salaries is trying to run his business as best he knows how. In any business there are things that seem foolish and without reason to an employe. He is absolutely sure he could do things better himself and remedy all the faults if he only had a chance. He tells his associates what he thinks, and is always on the point of quitting, and when he does get another job he just stands on his hind legs and fairly shrieks his denunciation of his last line of work and everything connected with it.

"A man who will do that isn't fair. He



REILLY AIMED A KICK AT THE SALES MANAGER'S BAG

will stab you behind your back. You can't trust him. If he is fair and above-board he will shut his mouth to the rest of the world and carry his kicks to the boss, perhaps through an indirect channel, or else say nothing at all. But whatever he does he shouldn't go out into the business world and spread tales of woe and disparagement about 'his last job.' Such talk never will help him get another position."

"You're not accusing me, are you?" demanded the Sales Manager. "I didn't know anything about him; I just sent him down to you because I didn't know what else to tell him."

"Who said anything about you?" retorted Reilly. "I'm just telling you what I thought of your man."

Timetable Closes the Dissertation.

The train which was to bear Reilly away had arrived and now was pulling out. The pair had talked as the speed was accelerated and Reilly had turned toward the train, waiting to grab the rear of the last coach, his newsboy experience having taught him it was the safest spot to hop a train.

"The next one that comes I'll put him wise," shouted the Sales Manager, gleefully, as Reilly, having advanced toward the rear of the train, began the sidestep preparatory to the jump.

"O, you will, will you?" he shouted, and as he caught the handrail and bottom step, he aimed a vicious kick at the Sales Manager's traveling bag as he passed—but missed it.

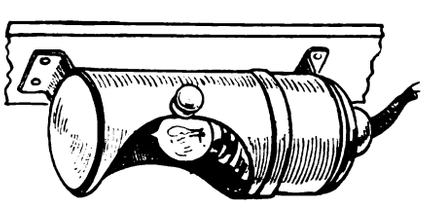
Method of Drilling Holes True.

The common machine shop method of drilling a hole true to a given center—that is to say, a hole of from about ¼ inch upward—is to mark the exact center with a center-punch and with a pair of dividers make one or more circles around the center, the largest circle a trifle larger than the hole. If the lines do not show clearly they are accurately "pricked" with a prick-punch—a small, sharp-pointed center-punch. The drill is started in the "center-pop" and allowed to penetrate about half the depth of its point, when it is withdrawn and the cut examined.

If the edge of the cut is perfectly concentric with the circle or circles, the drilling is proceeded with; but if the drill has worked to one side, a shallow groove is cut with a round-nosed chisel down the side of the cut to "draw" the drill back to center. If the drill is small or the cut only of very slight depth a heavy, deep "center-pop" will bring the drill point back. The drill is allowed to cut a trifle more and if it centers properly it is sent down; otherwise the "drawing" process is repeated until the desired effect is obtained. Once the lip of the dirll has cut below the surface of the metal an error in centering cannot be corrected by drawing. Small holes are circled only once, as are larger holes that are not required to be absolutely accurate; but where the holes are large and must be exactly located, two or three concentric circles are made and prick-punched.

Dome Lights for Touring Car Tops.

When the top is up and the curtains are down on a touring car the interior conditions are much the same as in a closed car minus the conveniences that usually go with closed cars. One of the most important of the things that are missing is an electric light, and it is with a view to making provision for such cases that the Cleveland Electric Storage Battery Co., of 116 Market street, St. Louis, Mo., has brought out the special canopy top lamp shown in the accompanying illustration.



CLEVELAND DOME LIGHT

The device consists of a cylindrical metal casing containing a lamp in a suitable socket, means being provided for attaching the casing to the top. Its shape is such that it can be left in place when the top is folded, there being a shutter which covers the lamp and prevents breakage.

One Way of Closing Car Doors.

Different people have different ways of doing things, and the chauffeurs of taxicabs have little ways of their own that are interesting, instructive and sometimes expensive. For example, one of the guild had his attention called to the fact that one the doors of his "cruiser" was open, while making fair speed. His instant and effective response was to jam on his brake for an instant, reducing the speed of the car suddenly and causing the door to swing to with a crash. Without even looking around, the chauffeur released his brake, speeded up and went his way—oblivious of the fact that it had cost a neat little amount in tire rubber, brake bands and general wear and tear in many parts of the car just to shut that door.

Resistance Offered by the Air.

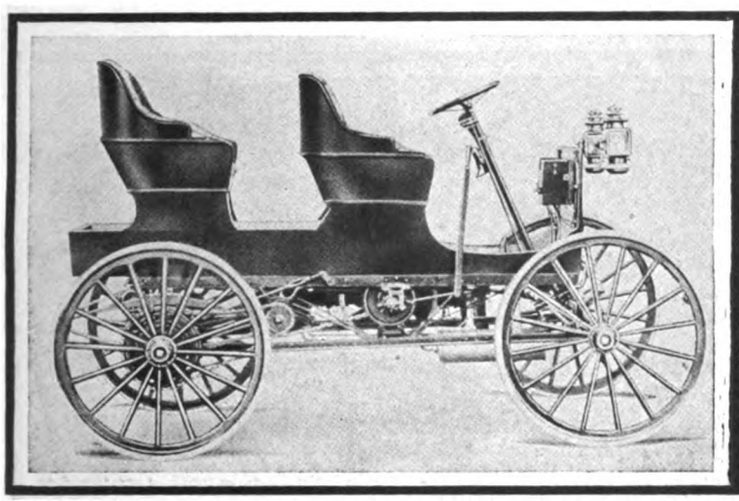
The resistance offered by the air to the passage of a car is considerable, when the machine is traveling at any speed. For instance, at 15 miles an hour there is a pressure of 1.1 pound for every square foot of head area; at 25 miles an hour there is a trifle over 3 pounds pressure per square foot; at 40 miles there is a pressure of 7.87 pounds; at 50 miles 12.3 pounds, at 75 miles 27.7 pounds, and at 100 miles an hour the pressure is 49.2 pounds per square foot.

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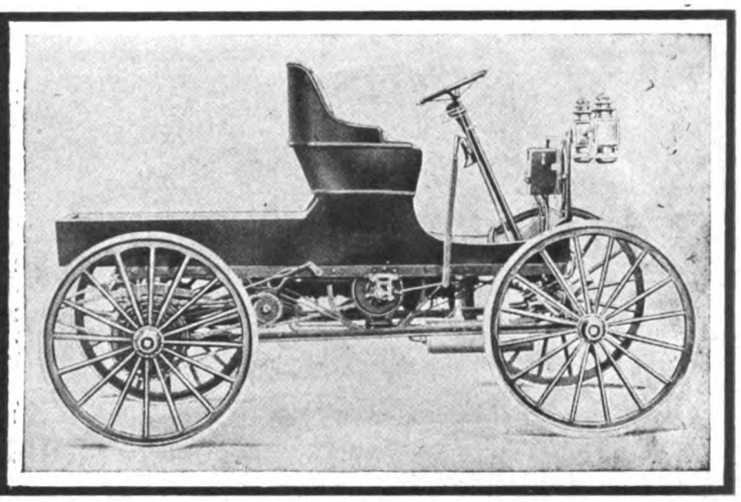
OFFERS MOTOR WAGONS AT ONCE-IMPOSSIBLE PRICES

McIntyre Interests Engage in Production of Light Convertible Models —One of Them Lists at Less Than $400.

Although the trend of automobile prices has been steadily downward, the day when a brand new motor wagon of any sort would be purchasable, even by dealers, for the sum of $292.50 seemed far removed. Despite the fact, and probably unknown to a very large portion of the trade, such a wagon really is available. It is offered to dealers at the figure quoted by the Auburn Motor Chassis Co., of Auburn, Ind., which is an outgrowth of the W. H. McIntyre Co. of the same city and whose McIntyre cars and trucks are well known. W. H. McIntyre himself is president and treasurer of the Chassis company, H. C. McIntyre is secretary and Walter Schultz, engineer.



FOUR-PASSENGER "HANDY" WHICH SELLS FOR $487.50



"HANDY, JR.," LISTED AT AMAZINGLY LOW PRICE OF $390

The little wagon in question, styled the Handy, Jr., has a carrying capacity of 500 pounds and is readily convertible to the purposes of either passengers or merchandise. The Handy family consists of four members, their list prices being, respectively, Handy, Jr., $390; Handy, Medium $487.50; Handy, Water Cooled, $625; Handy, Sr., $750.

The car which touches the low water mark of price is the "Handy, jr.," and is the smallest member of the "Handy wagon" family, which includes two other members —the "Handy wagon" without suffixes and the "Handy, Sr."—having carrying capacities of 800 pounds and 1,500 pounds, respectively. The "junior" is built on the same lines as the larger machines throughout. As shown in the accompanying illustrations, the vehicle is of the express type, with wheels 34 inches in diameter, shod with 1¾-inch cushion tires, and is propelled by a two-cylinder motor of the opposed type, air-cooled, located under the body; the rear wheels, turning on a solid axle, are driven through a countershaft and side chains. The cylinders have a bore and stroke of 3¾ inches—in other words, it is a "square" engine—and is rated at 11 horsepower. It is placed with its shaft crosswise of the car, the planetary change-speed mechanism, giving the usual two forward speeds and reverse, being carried on an extension of the crankshaft and driving by chain to the countershaft. Gears are of cut steel and run in oil. The low speed and reverse are obtained through pedals and the high speed, in which no gears are doing duty, through a hand lever. The bevel gear differential is, of course, on the countershaft. Simple and efficient means are provided for taking up slack in all the driving chains.

The frame is of 1½ x 1½ x ¼ inch angle iron and is designed to accommodate a body 30 inches wide and 72 inches long. Cross members of the same material as the main frame support the motor and transmission, there being an outboard bearing for the end of the transmission shaft carrying the driving sprocket. Brakes of the contracting band type are operated on drums on the sprockets of the rear wheels. Wood reaches, stiffened by one-inch channel irons, connect the axles. The axles are 1⅛ inches in diameter, of what is known in the wagon industry as the long distance type, with Collinge collars. Full elliptic springs are employed both front and rear, all being 36 inches long and 1½ inches wide, with five leaves. Sarven wheels are fitted. The wheelbase is 65 inches. The full list price of the car is $390, which includes two oil sidelights, oil tail light, horn, and tools.

The medium weight "Handy wagon," designed for carrying 800 pounds, has a motor of the same type as the small machine, but with cylinders of 4⅛ inches bore and 3¾ inches stroke—a short-stroke motor—and is rated at 14 horsepower; it is air-cooled, like the smaller machine, and drives through the same type of transmission mechanism. Naturally, the dimensions of the car are larger throughout. The wheelbase is 77 inches and the wheels, though of the same diameter as those of the smaller car, have 1⅜-inch tires. The frame is of angle steel 2 x 2 x ¼ inch, hot riveted and trussed; axles are of forged steel, 1¼ inches square. The dealers' price of the medium weight car is $365.62 and the list price $487.50.

The "Handy wagon, sr.," which has a capacity of 1,500 pounds and lists at $750, has a motor with cylinders 4¾ inches "square" and carries a rating of 20 horsepower. The wheelbase is 86 inches. The body back of the driver's seat is 45 inches wide and 68 inches long. The wheels, of the same diameter as on the other models, have 2-inch rear and 1¾-inch front tires. On the two larger wagons pneumatic tires are fitted as an extra. The net price to dealers is $562.50.

A water-cooled model also has been brought out recently, having a 14-horsepower opposed cylinder motor and carrying 1,000 pounds load. The motor is placed under a conventionel type of hood at the front, and the cooling water is circulated by thermo-syphonic action. The motor and driving mehcanism are of the same general construction as on the air-cooled models apart from the cooling features.

May be National Tractor Test in Detroit.

If present plans do not go wrong, a national tractor test will next year be made a feature of the Michigan State fair, which annually is held in Detroit. If it is brought about, it will occur during the month of September.

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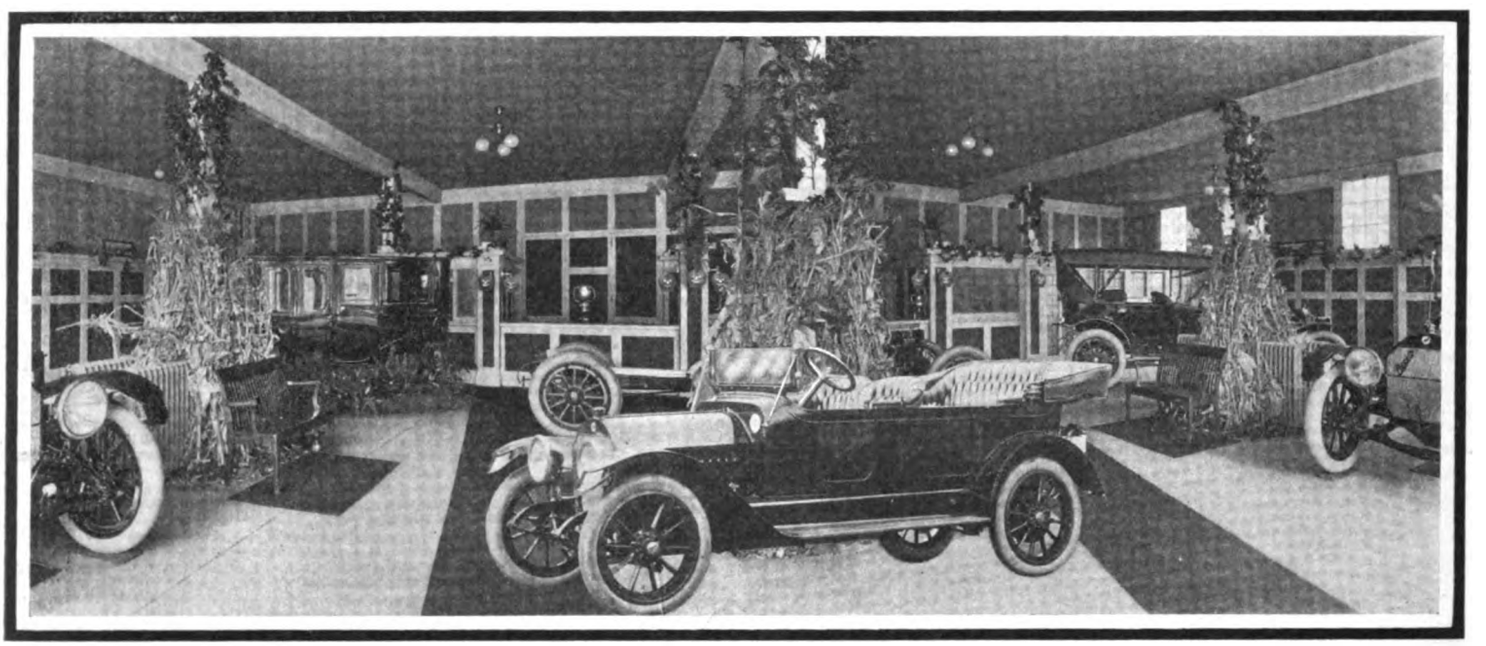
SEASONABLE SETTING THAT HELPS SELL CARS

One Progressive Establishment That Obtained a Pleasing "Atmosphere" With the Aid of a Thanksgiving Motif—The Value of Cornstalks and Autumn Leaves in Making an Effective Salesroom Background.

The undeniably good effect of suitable background in the salesroom may not be appreciated by every automobile dealer, but it certainly is appreciated by those who control the destinies of the Premier branch in Indianapolis, Ind. Incidentally, these men, or more particularly J. Guy Monihan—who is responsible for the "stage setting" which is pictured herewith—made a clever play in a well thought out endeavor to put to good purpose the "spirit of the times."

It requires not more than half a glance to reveal that the salesroom has been decked out in autumnal trimmings, cornstalks and yellowing leaves and pumpkin faces and ferns and things in a way which is more than ordinarily suggestive of the particular day designated each year by the President as a time propitious for the offering up of thanks. The Premier decorators may have argued that inasmuch as everybody always affects Christmas trimmings at Christmas time, why not apply the same reasoning and affect Thanksgiving trimmings at Thanksgiving time; but be that as it may, it cannot be denied that he has obtained a desirable atmosphere—an atmosphere of quiet and cheerfulness that is particularly conducive to the signing of sales contracts. Or it may be that Monihan figured that every Premier owner had more than one reason to be thankful or that the car itself had reason to be thankful for having such distinguished parents or that the parents ought to be, and probably are, thankful to be the proud progenitors of such an enviable family.

Aside from all this, however, the salesroom is quite unusual in its decorative scheme and serves as an additional indication of the growing tendency toward more careful "stage setting" and the use of "properties" that are good, though previously they were viewed askance. It is an appreciation of the fact that there is something in "background" and "atmosphere" after all, and that as long as such is the case some one is going to benefit by it.



PREMIER SALESROOM TO WHICH THE "THANKSGIVING TOUCH" WAS CLEVERLY GIVEN

Color and Scenes for New York Show.

While the decorative theme still is carefully guarded, it has been made known that white and gold will be the color scheme which will prevail in that part of the New York show which will be held at Madison Square Garden. The other building which will be utilized, Grand Central Palace, does not so readily lend itself to decorative effort and, as on the previous occasion, landscapes and waterscapes fixed in the panels of the walls will constitute the chief ornamentation.

On the walls of the main floor will be several Long Island scenes, a view of Delaware Water Gap, views in the Berkshires, and a painting of scenes along the Hudson near West Point. On the mezzanine floor, Western views will be found, including the Grand Canyon of the Colorado, gorges and passes in the Rocky Mountains, California vistas, sections of the cattle country and prairies. The balcony will be devoted to the Sunny South, including paintings of the famous beach at Ormond, Fla., Savannah and other points.

City Designates Colors for Side Lamps.

In Grand Rapids, Mich., at least, it now is illegal for private automobile lamps to be provided with other than white side lights. It appears that a contrary practice was becoming too general and, as a result, the city fathers passed the necessary ordinance. The only motor vehicles privileged to display other than white side lights are fire engines, to which red and green have been assigned; police wagons, which must display red lights, and ambulances, the lamps of which must be equipped with purple side lights.

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PROSPERITY IN UNITY IS ONE CITY'S PLAN

Dealers, Garagemen and Supply Houses in Mount Vernon Form an Association to Eradicate Trade Abuses—Arbitration of Disputed Accounts and a "Helping Hand" Committee Two of Several Unusual Features.

Whenever anything is suggested as remedial of a multitude of ills or difficulties of any description, the common practice is to label it as Utopian, which is but another way of saying that it is a fine thing but won't work; sometimes the criers of "Utopia" are wrong, however, and the decried plans succeed in spite of them.

Association Makes for Better Conditions.

The garagemen and dealers of Mount Vernon, N. Y., have undertaken plans of the sort. They are not endeavoring to bring things nearer to a millennial condition, but they have set themselves to effect changes that will make the garage and car selling trade in Mount Vernon a profitable business through the mediums of co-operation and good fellowship of the fifteen members who constitute the Mount Vernon Automobile Garage and Dealers' Association. There is but one man in the city who did not join the association, and it is almost needless to add that, with the rest of the tradesmen, he stands like the proverbial nephitine at a lawn party.

The association is little more than a month old and has hardly swung into its stride as yet, but the hopes of the members run high; which makes it pertinent to say that the organizers are not a group of idealists who conceived the scheme overnight and rushed into it without forethought; they are men who saw the trade in the whole city, which has a population of some 35,000, slipping down grade, prices being cut, money being lost through bad debts and an unhealthy form of competition growing rapidly.

Price Cutting That Affected Trade.

In the city are, as stated, fifteen places of business connected with the automobile trade; a few accessory dealers only, several combine a garage business with car agencies and the remainder are garagemen exclusively. Of the whole number the largest establishments are the Mount Vernon Auto Station, at Prospect street and North Fourth avenue, and Joseph A. Hennings's garage and agency, on North Third avenue. Trade was better several years ago than it was just prior to the formation of the association; in those earlier days, garages were not so numerous and each did more business. Then the smaller establishments began to spring up and price-cutting began.

"Bad Debts" Cut Well Into Profits.

Another destructive feature of the business was the bad debts. Owners—not all, of course, but some—would trade and store at a garage and leave without paying their bills. Some other garage, however, always welcomed them. Oftentimes the bills were left unpaid because of disputes, although the owner was abundantly able and willing to pay what he regarded as a just debt, if he were but convinced that it was just. Some of the chauffeurs insisted upon their 10 per cent. commissions and some of the garagemen lost trade when they refused to "come across." Owners felt free to buy gasolene and supplies where they wished, although the garagemen maintained that such trade should go to the garage where the owner stored. Many customers were slow in paying bills and taking everything together, the garageman individually felt justified in expressing the sentiment of so many other garage proprietors, "No money in it."

Scope of the Association's Work.

Then came the idea of the association; E. H. Bowman, one of the proprietors and the active member of the firm in the Mount Vernon Auto Station, was the father of it. First he allied the largest garagemen and dealers with himself and they went after the smaller men. It was slow work at first, but finally all agreed to come in—sixteen of them. But when it came to signing the agreement one backed out, for reasons of his own.

Many details of the trade are covered by the rules that the association members adopted. The principal points are:

1. Co-operative buying.
2. Account adjusting committee.
3. Committee to help failing business.
4. Storage schedule.
5. Uniform gasolene price.
6. Compelling supply buying at garage of storage.
7. Prompt payment of bills.
8. Uniform wages to employes.
9. No commissions to chauffeurs.

Co-operative buying, while it may not be the most important consideration so far as garage operation is concerned, is worthy of attention from the standpoint of financial returns. Heretofore each man had bought what he needed as he needed it. Now the plan is to "lump orders" and obtain better discounts. Bowman states that in the course of a year he uses about 2,500 dry cells; by co-operative buying he can save two cents on each cell, which means $50 a year. Similarly applied to other supplies, the discounts are of no inconsequential amount.

Account Adjusting Committee.

One part of the plan of the association which, if any, has a tendency toward the Utopian, but which is not impracticable if the members but stand together and do not allow dissension to creep in, is an Account Adjusting Committee. Preceding this in order of sequence, however, is a rule that no member of the association shall accept for storage any owner who owes a bill of any description at any garage represented in the association. Should a car owner leave a garage without paying his bill, it is the committee's duty to try to adjust the difficulty. The membership of the committee is not permanent; it is appointive and is to consist of two non-partisan members of the association and the garageman who has the grievance. These three are to call upon the offending owner, if such he may be termed, and endeavor to make peace. If it is a disputed account the committee is resolved into a board of arbitration and every effort will be made to bring the owner back into the fold. If they are unsuccessful the owner must abide by the consequences and shift for himself.

The "Helping Hand" Idea.

Another committee of a similar nature which also suggests Utopia and which is without a name, but is designed to assist in placing the whole Mount Vernon garage trade on a paying basis: Should there be a member of the association who is not making the money he feels he should make, this committee's services are at his disposal. His accounts and business methods are to be examined, an effort is to be made to ascertain why he is not successful, and once the solution is found the unfortunate mem-

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ber is to be given a concerted boost toward the realm of profits. But if after the committee has done all it can do he cannot make good, he must of necessity fail, for the committee cannot step in and run the man's business for him; he must have some ability all his own with which to work out his salvation.

Hereafter there will be no advantage in an owner shifting garages, so far as storage prices are concerned The schedule adopted is: Smallest cars, $10; light delivery, $12; others, $15, $20 and $25, the latter, of course, being the large touring cars and limousines. Gasolene is to be sold at 20 cents a gallon, with a discount of 1 per cent. per gallon to owners owning 50-, 100- and 200-gallon coupon books. The coupon book discount of 1 per cent. a gallon will apply at all times, regardless of any future change in the fixed retail rate. The garagemen now are paying 16 cents.

Boosting Accessory Sales.

In connection with storage, the association has adopted a rule to the effect that every owner must purchase his gasolene and supplies at the garage in which he stores. This is to give the garageman the profit which he claims he does not always make on storage alone. There, however, is an alternative; the owner may buy where he pleases, but if he goes outside the garage for supplies and gasolene his storage rate automatically is raised $5 a month.

Bills must be paid promptly. The system operated by the Mount Vernon Auto Station has been adopted by the association. This requires the payment of bills within 15 days after rendering; should an owner fail to do so, there is a likelihood that the Account Adjusting Committee will be called into action.

Elimination of Chauffeur's Rake-Off.

Wages to employes heretofore have been variant. The members of the association believe a uniform schedule is best and have decided that a fair rate per hour is Foreman, 75 cents; mechanics, 60 cents; apprentices, 40 cents. This wage schedule, apparently, leaves little to be desired by the men in the way of remuneration, and the garagemen hope it will be the means of promoting a firm feeling of harmony between the members of the association and the workmen.

One of the great evils to be met by the new organization was that of paying commissions to chauffeurs. Some tradesmen had already discounted the practice when the association was formed and the comprehensive union of garages and supply stores, if enduring, should eliminate this species of "graft" in Mount Vernon territory.

"We know the car owners are opposed to it, and so are we," said Bowman. "There is no excuse for it. If commissions are given it is a case of rob yourself or rob the owner. I know one man who sells gasolene for 18 cents and gives chauffeurs a 10 per cent. commission. He buys at 16 cents, and therefore is making but two-tenths of a cent a gallon. He must sell five gallons in order to make a cent profit. Of course, I don't know anything about the gallons he gives, but if I were an owner I wouldn't buy much 'gas' of him."

Bowman is a garageman and not a dealer; he had an agency last year, but this season relinquished it.

"Unless you are able to take care of both," he said, "you are sure to neglect one or the other."

Why He Gave Up Agency.

"Did you give up the agency because the garage paid better?" he was asked.

"No," was his reply, "I gave up the agency because I have so much money invested in the garage that I couldn't very well give up the garage."

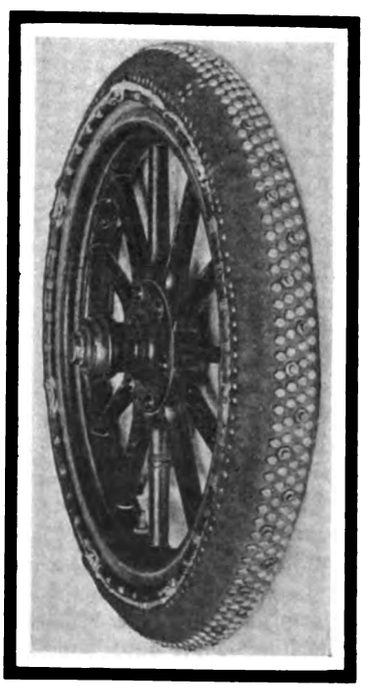
Bowman's garage is 80 x 100 feet and is about the largest in the city. There is a capacity for 75 cars, but the average storage is in the neighborhood of 40. Nine men are employed, three being night men, whose duty it is to wash and polish the cars. His business partner is Nanning Stires, an attorney, who also is president of the association. The association's other officers are Vice-president, Albert Jincks, Jr.; treasurer, Joseph Henning; secretary, Albert Jincks, Sr.

Woodworth Tread with Double Grip.

At a time that is decidedly appropriate, when the weather is giving indications of the snow and ice that are to come and invest the streets with a slipperiness that makes the smooth-tired automobile a thing to be handled with the utmost delicacy, the Leather Tire Goods Co., of Niagara Falls, N. Y., has brought out a new Woodworth tread designed to hold the car on its course under the most trying road conditions.

The new band is styled the "double grip tread" and consists of a cover of the waterproofed leather that has acquired such a reputation for itself and its makers, with a studding of steel rivets designed to afford a hold on surfaces of ordinary unctiousness, while a series of special studs are provided to take care of extraordinary conditions, such as smooth ice or hard snow.

The special studs are about quarter of an inch longer than the regular studs, and are spaced about two inches apart; they are of special steel, tempered glass-hard, and can be screwed out when worn and new ones screwed in. The double grip tread is made in center-studded form for use on city streets or fairly good roads, and in full studded form for rutty country highways. In all cases the fastenings are of the



WOODWORTH "DOUBLE GRIP" TREAD

regular Woodworth type, with coil springs to keep the treads in proper position.

Wood Blocks for Factory Flooring.

Wooden blocks impregnated with creosote, such as commonly are used for pavement, gradually are coming into greater use for flooring factory buildings. Already several automobile factories are floored with them, their advantages being their practical indestructibility, their fireproofness, the lessened danger of damage resulting to dropped metal parts, and quietness. Incidentally, such floors are practically dustless and are not subject to the crumbling action which takes place when concrete or cement floors are chipped or abrazed.

Old Files for Removing Metal "Skin."

When it is necessary to file a cast iron surface that has been under friction and has acquired a glassy "skin," it is best and easiest to get through the skin by using the edges of old half-round, square or fishback files. The use of a good file means the spoiling of its cutting edges.

Bright steel screws and other small articles can be "blued" by the simple process of holding them on a piece of sheet iron over a fire until they assume the desired hue.

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APPLYING HIGH FREQUENCY CURRENT TO IGNITION

Why "Stepping Up" High Tension Ignition Current Changes Its Characteristics and Causes Non-luminous Sparks That Are Better Than "Arcs"—Other Unusual Properties Made Plain by an Expert.

To those who incline toward delving into electrical phenomena it is doubtful if any are of greater interest than those which have to do with what has come to be known as high frequency current. Though it would require a large sized volume clearly to set forth all of the peculiarities of this peculiar kind of current, a great many of them that are interesting and instructive were made plain by Ray H. Manson, who is chief engineer of the Dean Electric Co. of Elyria, O., in a paper which he read at the last meeting of the Detroit Section of the Society of Automobile Engineers. Manson is an electrical engineer of ability, and his paper, which had to do with the adaption of high frequency current for ignition purposes, is more than ordinarily interesting and cannot fail to carry weight.

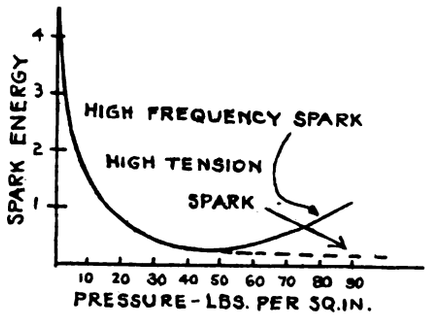


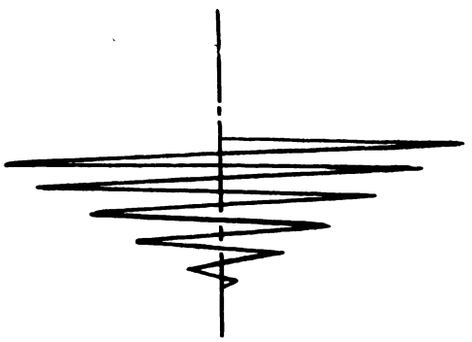
FIG. 2

Meaning of "High Frequency" Current.

Briefly, the term high frequency current means alternating current, in which the alternations or oscillations have been "stepped up" considerably higher than it is possible to generate them with the ordinary apparatus such as a magneto or an induction coil. The first commercial form of high frequency high tension ignition for internal combustion engines was developed by Seeley about seven years ago. Since then the apparatus has been produced in limited quantities by the Los Angeles factory of the High Frequency Coil Co., though no determined effort ever has been made to place it on the open market in quantity, the manufacturers being content to deal direct with car owners and users.

In leading up to his theme, Manson pointed out that the use of high frequency current for ignition purposes introduces several unusual and advantageous features.

"A high frequency discharge," he said, "is in the form of electrical oscillations, these oscillations rapidly succeeding one another, each succeeding one being of less intensity than the one preceding, gradually dying down to nil, as shown diagrammatically in Fig. 1. It will be observed that this electrical oscillatory action is similar to the mechanical vibration of a tuning fork or to the vibration of a strip of metal, which is firmly held in a vise and struck a blow. The first excursion of the strip of metal is the maximum, and the succeeding movements gradually diminish in magnitude until they die out.


FIG. 1

How Phenomena Are Produced.

"The high frequency discharge is obtained in practice in a very simple manner by means of a low capacity condenser. The source of electrical current can be the discharge from a low tension magneto armature or a battery and coil, any commercial type of interrupter being used, as in standard high tension systems. The condenser is connected across the interrupter gap and a small Tesla transformer or resonator included in series with the condenser. When the interruption of the current takes place, by the separation of the breaker contact points, the high inductive discharge of the armature or the coil is at once taken up by the condenser, which in turn sets up a series of oscillations across the gap made by the separation of these points, all of which takes place before the contacts have reached their maximum separation. These electrical oscillations passing through the primary of the resonator set up a high inductive field, which induces a current of high tension and of high frequency in the secondary of the resonator, this current being conducted to the spark plug.

"By properly selecting the capacity of the condenser and other constants in the circuit, an oscillatory discharge of any desired frequency can be obtained. In this particular system, one of over 500,000 oscillations per second is produced. This is so rapid as to exceed the sensibility of the nerves, the same as the X-Rays are invisible to the eye, and the very high mechanical vibrations are inaudible to the ear. Thus it is that the spark plugs of the high frequency system can be handled with impunity without danger of shocks.

Single Sparks Readily Divisible.

"What is apparently a single spark from the high frequency resonator can be separated by means of an air blast into a number of distinct sparks, each one probably representing a complete discharge of the condenser and consisting of a large number of oscillations. After discharging, the condenser is again charged by the induced current in the main inductance coil, this current being sufficient to charge the condenser a number of times.

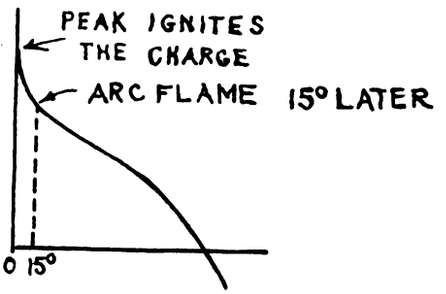


FIG. 3

When Heat Value Is Deceptive.

"In dealing with the spark from the low frequency induction coil and magneto, the heat value is considered of first importance. The high frequency discharge, apparently, has little heat, yet it will ignite a gas mixture with greater ease than will the dynamic spark. This can be shown conclusively by passing the two sparks through the same gas under the same conditions, and using a mixture of gas and air so rare that the dynamic spark will not ignite it, while the high frequency spark will ignite it.

"This is shown in another way by tak-

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ing two sparks, one a 12-inch oscillatory discharge of about 1,000,000 oscillations per second and another spark of the same length from an ordinary induction coil. If hydrogen bubbles are produced in the path of these sparks, it will be found that the spark from the induction coil will have to penetrate the bubble before an explosion takes place, while if the oscillatory discharge passes within two or three inches of the bubble, the invisible feelers or branches will explode the gas.

Application of the "Ionic Theory."

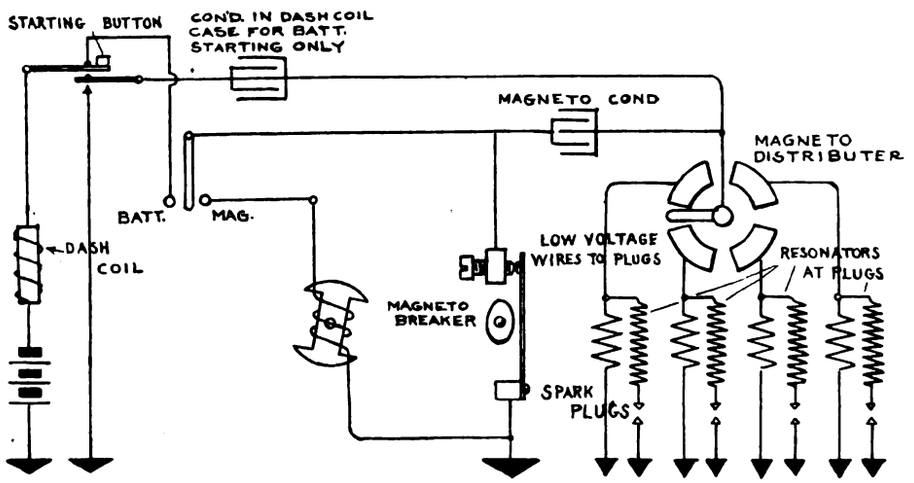
"If we make use of the 'Ionic theory' of electricity (that the current or 'fluid' is carried by positive and negative ions and that when the current passes these ions are arranged in a similar manner to iron filings by magnetism) we can find reasons for some of the advantageous features of the high frequency discharge for gas engine ignition.

"The high frequency spark ionizes the gas for a radius of one-half an inch or so around the contact points, the action being similar to the coherer or detector of the wireless telegraph. This can be observed by putting a discharge under pressure and in total darkness. Professor Frederick Blake, one of the foremost authorities on high frequency currents, states that this ionizing increases the speed of propagating flame tremendously.

Rapidity of Flame Propagation.

"Comparing this action to that of the induction coil or dynamic spark, in the latter flame is propagated only from a few molecules in all directions at the point of the spark. Thus, the weak high frequency spark is more efficient than a very large hot spark of the high tension low frequency kind, the only advantage of the latter being the igniting of more molecules of gas at the spark points, with a slight gain in the time required to burn completely the whole volume of gas contained within the cylinder.

"Another important advantage of the high frequency spark for igniting gases under pressure was brought out by Reginald A. Fessenden, prior to August 12, 1902. In experimenting with wireless telegraphy, a new phenomenon was produced, that of increased radiation when the pressure exceeds 60 pounds above that of the atmosphere. At this point the radiation begins to increase, and at 80 pounds is about 3½ times what it was at 50 pounds. This is shown diagrammatically in Fig. 2 ,the spark energy gradually decreasing as the pressure increases until 50 pounds is reached. With the high frequency discharge it increases



SIMPLE WIRING OF COMPLETE HIGH FREQUENCY HIGH TENSION IGNITION SYSTEM

rapidly as described. In the case of a dynamic or low frequency discharge the downward characteristic of the curve is continued, as shown in the dotted line, the spark energy always decreasing with the increase in pressure.

"The term 'radiation,' as used in this connection, really means 'radiant energy' or the electro-magnetic energy dissipated in the spark gap. Therefore, it can be seen that instead of the spark energy of the high frequency discharge being less under operating cylinder pressures, it really is augmented under these conditions.

Properties of Non-Luminous Rays.

"There is still another phenomenon in the ignition of gases by means of the high frequency oscillatory discharge. It is a scientific fact that a high frequency oscillatory discharge is composed largely of non-luminous heat rays, which are sometimes known as Herschelian, from Sir W. Herschel, who first discovered their existence. These non-luminous rays come outside of the red rays of the visible spectrum, and are more effective than the visible rays of the spectrum. The high frequency discharge being very rich in these non-luminous rays will ignite a mixture even when it is shielded from the luminous spark discharge. Experiments demonstrate that gas can be ignited very rapidly by these non-luminous rays when there is no possibility of the luminous portion of the spark being in contact with the gas. A similar phenomenon is produced in the engine cylinder when non-luminous rays from the high frequency spark heat the gases therein contained to their flashing point.

High Compression Increases Efficiency.

"In the Hi-Fre-Co system, a plug spark gap of 3/32 inch can be used to advantage where the .01 of an inch spark gap is the limit for the low frequency magneto. Naturally, a proportionately greater amount of gas is included between the terminals, and an otherwise highly efficient oscillatory discharge becomes more effective in the rapidity with which it ignites the mixture.

"As the high frequency oscillatory discharge is of very much less duration than a dynamic discharge and does not depend entirely on visible heat to ignite the charge, but on a combination of the features previously explained, there is no fusing or burning away of the spark plug electrodes, as there is in a low frequency magneto system, employing the so-called 'arc flame.' An apparent advantage of this latter discharge is in the heat which is exhibited by the thick, heavy flame when discharged at atmospheric pressures.

"At a pressure of over 60 pounds in the cylinder, this thick, heavy discharge becomes a mere thread, although it still retains the same characteristic curve which is reproduced by the oscillograph, as shown in Fig. 3. The peak of this curve represents the high voltage discharge and the portion at the right, occurring about 15 degrees later, is the flaming portion of the discharge. The former is effective in igniting the gas mixture, while the latter is of no useful purpose and actually is of a serious disadvantage when the magneto is driven at high speed, due to the burning up of the spark plug contacts."

Proper Placing of Lock Nuts.

When two nuts, one thick and the other thin, are put on a single bolt, one nut acting as a lock, the thin nut should be at the bottom, in the same position as a lock washer, because the top nut will be under the greatest strain and should, therefore, be the thick one.

Graphite for Packing Stuffing-Boxes.

In packing stuffing-boxes on rotary pumps and similar devices, it is well to make liberal use of graphite in the packing material. New packing will compress rather easily, and the gland should be screwed down soon after re-packing to avoid leakage.

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STARTING COLD MOTORS ON COLD MORNINGS

Why a Chilled Engine Is Difficult to Start—Various Methods of Applying Heat Sufficient to Vaporize the Fuel—Motor Starters Eliminate Cold Weather Starting Troubles—Danger in the Use of an Open Flame.

It makes no difference how good a motor is; it will give more or less trouble in starting if it becomes very cold. The excellence of the motor has nothing to do with it; neither has the carburetter efficiency. The trouble is that there is not enough heat in the frigid air to keep the gasolene in a vaporous state long enough to become ignited. The carburetter does the best it can; the liquid is thoroughly sprayed into the air and just a trifle of heat would do the rest; but the heat is lacking, the gasolene becomes chilled and instead of filling the cylinders with an inflammable vapor, it condenses and is deposited on the icy, iron surfaces, or collects in heavy, woolly vapor, close to the piston head. If the air is very damp there is likely to be further aggravation in the condensation of moisture on the spark plug, effectually short-circuiting it and preventing the generation of the indispensable spark.

Motor Starter a Winter Boon.

The owner of a car that is fitted with a good motor starter is a man who takes no interest in "wrinkles" for overcoming starting troubles, for the sum total of his labors, providing everything is in normal condition, is the pressing of a button or the swinging of a lever. A starter of the gas type will very quickly warm up cold cylinders until they pick up on gasolene, and an electric starter will keep the motor turning over at a rate that will bring about the desired results with little delay; at the worst only a little persuasion in the way of priming while the motor is running under the starter is all that will be required.

Things that May Induce Explosions.

There are various "wrinkles" for making motors easy to start when weather conditions are unpropitious, and most of them depend upon the application of heat in one way or another. If dampness and the consequent short-circuiting of the plugs by water is at the bottom of the difficulty, the remedy, of course, lies in removing the plugs, drying them and trying again. If the air is excessively damp it may be necessary to heat the plugs before replacing them, for it does not take long for a watery deposit to re-form on the points. The use of a little kerosene, put into the cylinders the night before, will prevent wet plugs, nine times out of ten, and will do the motor good in addition. The kerosene may be squirted in through the priming cocks and the engine turned over by hand a few times while still warm, or the oil may be injected by way of the intake pipe and one of the many combined priming and auxiliary air valves that are on the market.

Value of the Kerosene Heater.

There is another way in which kerosene can be used, and that is as a fuel to heat the garage and the motor. A small kerosene heater is a splendid thing, properly used, and will save an enormous amount of the trouble that goes with hard starting. Lighted half an hour or so before the car is to be used, and placed as close as possible to the motor—under it, if this is practicable—it will heat things sufficiently to make starting an easy matter, provided, of course, that the motor is in normal condition. An oil heater is also a very great comfort when it is necessary to work on a car in a garage not otherwise heated. And apart from the fact that working with cold, stiff fingers is an extremely disagreeable business, doing repair work or making adjustments when one's digits feel as if they were twice their normal size, is unsatisfactory because it is difficult to do things as they should be done.

When Hot Fuel May be Effective.

A wrinkle that often is effective in getting a chilled motor moving consists in heating the gasolene used for priming the cylinders, or else filling the carburetter with hot fuel, first draining off the cold liquid. Or hot gasolene may be poured on the wire screen at the mouth of the air inlet. The greatest care should be taken, however, in heating the fuel; the proper way is to place a half-pint squirt can of gasolene in a vessel of hot water until the desired temperature is attained. Of course, the effect of heating the fuel will not last long in the cold environs of the interior of the motor, and not a second should be lost in cranking the engine after the hot gasolene has been used.

The fact that gasolene in the form of a very heavy vapor will settle near the piston head of a cold motor naturally suggests that if a spark could be produced in this little fog-bank, it might be ignited. This is true, and it not infrequently happens that a motor that resists all other attempts to start it will promptly get down to work if the cylinders are fitted with plugs that reach down into the gas far enough to enter the low-lying vapor. Such plugs are not the best for regular running, ordinarily, and for this reason it is somewhat difficult to obtain them; when everything else fails, however, the long plug may be the saving of the situation. Two-cycle motors which start hard often are amenable to this method of persuasion.

Hot Cloths Better Than Gasolene Torches.

Once in a while a man is found who indulges in the practice of heating his carburetter and intake pipe with a gasolene torch or other open flame in order to save trouble in starting. The only thing that can be said of such a method of warming up, is that it is thoroughly dangerous and ought to be severely let alone.

One of the most efficacious methods of applying heat is to wrap cloths around the carburetter and intake piping and pour boiling water on them. The fabric will hold the water and the heat and warm up the metal much more effectually than if water were poured direct on the piping; a given amount of water goes much further if held and made to give up all its heat than if it is merely allowed to run off and give most of its heat to the unappreciative air. The trouble with this plan is that there is a possibility—in some cases a probability—of getting water into the ignition apparatus and the carburetter. If such is the case, the cloths can be dipped in hot water and most of the water squeezed out before the cloths are wrapped around the pipes.

Take Chill Out of Cooling Water.

If plenty of hot water is available there is nothing more effective than filling the cooling system with it. There are circumstances, however, under which hot water must be used with considerable care. In the case of a car with a big motor and a correspondingly big cooling system — whether a powerful pleasure car or a commercial vehicle of large capacity—the amount of heat required to make any im-

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pression on the great area of cold metal is very considerable, and a small quantity of hot water poured into the radiator would be so quickly chilled as to do no good. Furthermore, if the weather should be very cold and the motor should refuse to start, there would be considerable danger of the water freezing in the pump and the radiator because of the rapidity with which it would lose its heat in passing over the cold metal walls and also because water that has been heated freezes more quickly than water that has not been heated and therefore contains its normal air content.

If, therefore, only a little water is available, it is better to use it on the carburetter and intake piping, and if hot water poured into the cooling system does not have the desired effect and there is no way of keeping up its temperature, it should be drained off before it has a chance to congeal. Of course, trouble from the freezing of previously heated water is not likely to occur except in very cold weather, but it is just as unwelcome then as at any other time, to say the least.

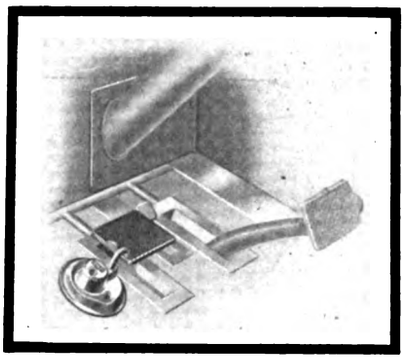
Gasolene of very light grade, or gasolene and ether mixed together half and half, or even ether alone, often are effective for priming because of the readiness with which they vaporize and form an inflammable vapor. A few feeble puffs of this light stuff often will warm the cylinders sufficiently to cause better vaporization of subsequent charges inserted via the priming cock, so that a near-explosion that is ineffective from a power point of view is not necessarily wholly wasted.

Whatever may be the method adopted for applying heat for starting purposes, the chances of getting the motor going are much better if the crank is turned rapidly than if it is pulled over slowly. A motor that will not start when cold if cranked deliberately, often will pick up if turned over rapidly. Sometimes a big motor, or one in which the compression is very high, can be started on two cylinders by taking out the spark plugs from two other cylinders to permit rapid cranking. Once two cylinders are well warmed the engine can be stopped and the plugs replaced; the rest is easy.

Under extreme conditions, as when a motor must be started outdoors in very cold weather, with not much chance for the application of heat, it is of course best to drain the cooling system, if it is not filled with an anti-freezing mixture, and try to get the motor started with an empty radiator. Then, no matter how cold it may be or how long it may take to get under way, they will be no danger of freezing. Ether, long plugs and brisk cranking are useful in such cases. When the motor is fairly well warmed up, water can be put in a little at a time, care being taken not to allow the engine to cool enough to make it hard to start again.

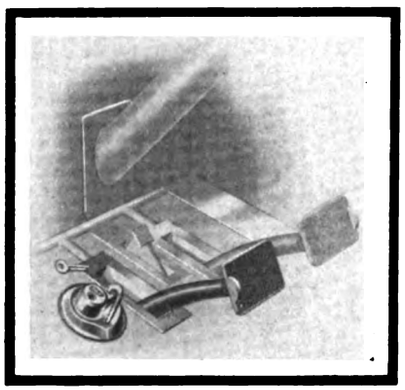
Locking Clutch to Prevent Thievery.

A. L. Loveley, former purchasing and stock manager for the E. R. Thomas Motor Car Co., of Buffalo, N. Y., and prior thereto assistant purchasing agent for the Packard Motor Car Co., has formed the A. L. Loveley Sales Co., of 517 Union Trust Building, Detroit, Mich., which is producing the Tabor clutch lock, designed to make harder the way of the thief and the joy-rider.



TABOR LOCK HOLDING CLUTCH

The Tabor lock, which is shown in the accompanying illustration, is designed to hold down the clutch pedal, in which position the clutch is disengaged and connection between the motor and the transmission mechanism broken; thus the propulsion of the car by the motor is impossible until the lock is released, though the wheels are free to rotate and the car can be moved by hand. The lock is screwed to the car



PEDAL FREE FROM LOCK

floor and the base, through which the screws holding the lock to the floor are passed, is covered by the upper part of the device, and this is held in position by virtue of the Yale lock, so that the screws cannot be tampered with when the lock is locked. The catch which engages the clutch pedal is in the form of a hook, which can be swung around clear of the pedal when the proper key is used; the shank of the hook passes through a hole in the floor of the car and is of case-hardened steel. In locking the clutch, the hook is pulled up, its tapered end inserted in a small hole in the pedal pad and pedal and hook are depressed together; when the pedal reaches the end of its downward movement the lock holds it there until released by means of the key.

Where Demonstrators Have Privileges.

If speed tests and hill climbing demonstrations really are necessary for the consummation of motor car sales, San Francisco dealers have the better of it, so to speak, for police regulations which went into effect on Monday last, 25th inst., provide the means whereby a demonstrator can ply his trade to his heart's content without fear of police interference because of his speeding. That is on at least two streets, one of which embraces a hill which is ideal for demonstrating purposes.

As a means of preventing abuse of the new order of things, which was brought about largely by the efforts of the Motor Car Dealers' Association, it is necessary for the demonstrator to obtain a permit which privileges him to speed at will along Nineteenth avenue within the limits which are marked by notification signs, or for the long four blocks which are embraced by the Dolores Hill. Permits are issued to none but demonstrators, and persons outside the trade caught speeding within the limited areas will be prosecuted in the usual manner.

To Increase Efficiency of Flat Drills.

The common blacksmith-made form of flat drill for metal work can be made very fast-cutting by turning the edges, in the direction of rotation, to form lips, or else by grinding grooves above and parallel with the cutting edges on the forward faces, the drill being forged rather heavy for the purpose.

Home Made Tool for Brass Turning.

One of the most convenient of hand-tools for turning brass is made of a triangular file by grinding off the teeth, breaking off an inch or two at the point and grinding a single face at an angle of about 35 degrees. The temper should be drawn to a medium straw color at the point, the body being made soft.

Milling Applied with a Coarse File.

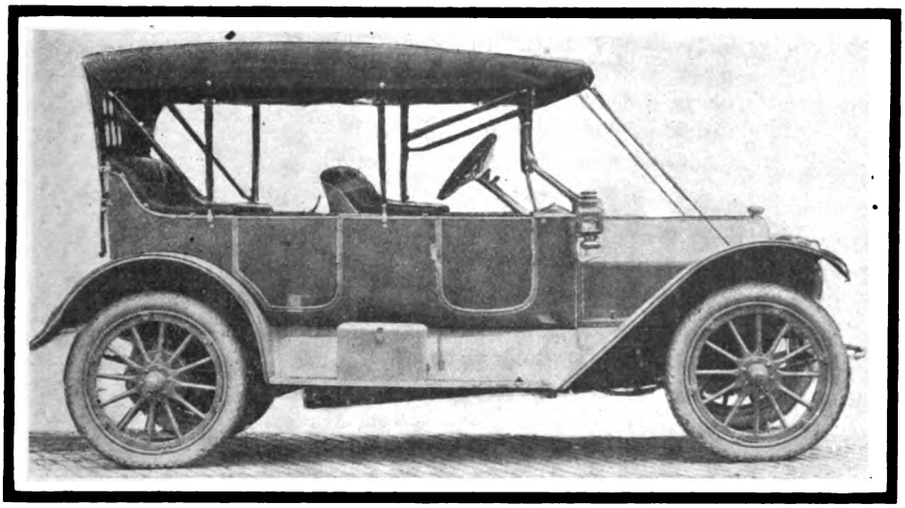
A very good substitute for a milled edge on a screw head or the like can be produced by rolling the object under a rather coarse flat file, exerting considerable pressure on the file. If the metal is not too hard it will be scored sufficiently to look well and afford a good grip.

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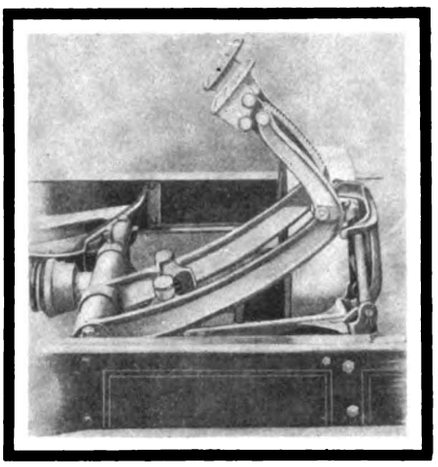
FRICTION DRIVE LAMBERT PRACTICALLY UNCHANGED

One Make of Motor Now Used in All Models—Room for Improvement Only in Comfort and Appearance.

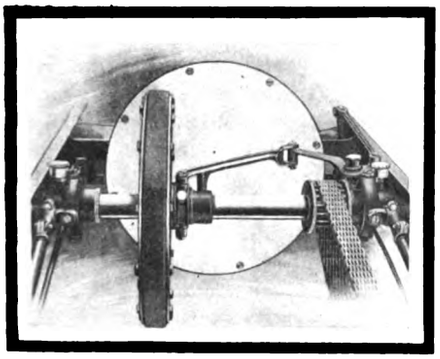
Extensive changes hardly are to be looked for in the transmission system of a car that eliminates as much of the conventional transmission gear as does the Lambert friction-driven machine; and it might reasonably be assumed that a car that has been on the market for twelve years, always built with the friction drive as a central feature, would be so far developed that very little alteration of any kind would be required to keep it fully abreast of the general progress made by the automobile industry generally. And as a matter of fact such is the case.



LAMBERT IN TOURING FORM EQUIPPED FOR THE ROAD



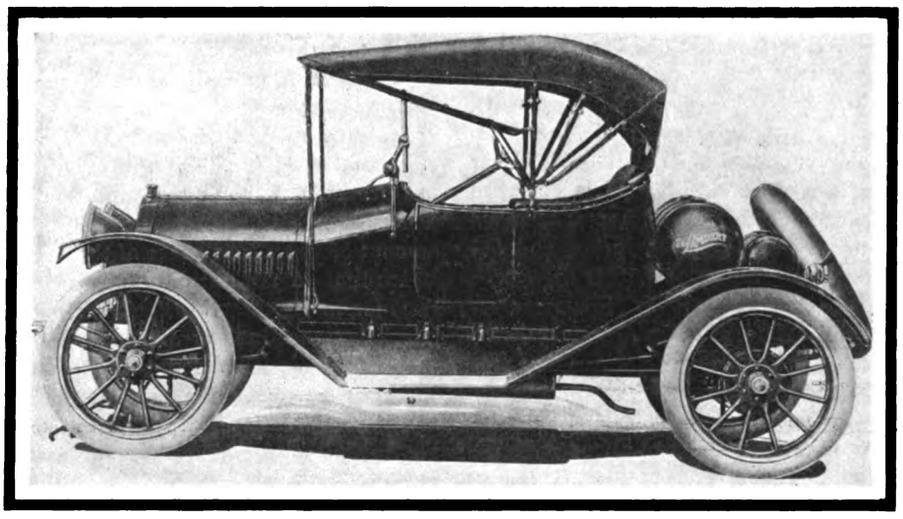
LAMBERT PEDAL CONTROL



LAMBERT FRICTION DISKS

The Lambert car, which is the product of the factory of the Buckeye Mfg. Co., of Anderson, Ind., and is one of the leading exponents of the principle of transmission power and changing speed by means of friction disks instead of through the intermediary of a clutch and sliding gears, is so slightly altered that a close scrutiny by an eye accustomed to the details of that particular machine would be necessary to disclose the improvements that have been made where experience indicated that there was room for them.

The most momentous change, if change it may be called, is the adoption of the Rutenber motor for the power generating unit of all models. Heretofore, while a number of motors of this make have been used by the Buckeye company, other makes also were installed in various Lambert cars; but the results obtained from the Rutenber have been such as to lead to its installation in all machines now manufactured at the Anderson factory. The company's feeling in this matter is that it can obtain better results, on the whole, by installing a motor manufactured by specialists in that line and devoting all its attention to the production of the chassis and its friction drive, than by dividing its energies by engaging in the manufacture of engines.



LAMBERT FRICTION DRIVEN ENCLOSED ROADSTER MODEL

Apart from the matter of motors, the improvements made are practicaly all worked out with a view to enhancing the appearance of the car, the comfort of the passengers or the convenience of the driver. The construction of the mudguards and the hood and their fastenings have been revised to give greater strength and better appearance and to eliminate rattling and rumbling when the car passes over rough road surfaces. All the mouldings on the hood are attached by an electric welding process, which eliminates rivets and results in a smooth, sightly covering for the motor. The side aprons of the mud-guards have been strengthened by bracing.

It is a well known fact that the hole which is drilled in the center of many springs for the center bolt is the source of no little trouble; breakages at this point are of common occurrence. In the new Lambert cars the front springs have no center holes. The convenience of the driver has been studied, with the result that the throt-

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tle control lever has been placed above the steering wheel—an improvement over the former somewhat inconvenient place under the wheel. There is now no partition in the middle of the front seat; the entire width of the seat is unbroken and there is sufficient room for three passengers, with a little close sitting—provided the passengers are not built on bulky lines.

With the exception of the changes referred to and a straight-line effect which has been given to the hood, the Lambert car is exactly as it was Of the four models that constitute the line, all embody the same constructional features, the slight differences that exist being due to the fact that some models are equipped with less powerful motors than others, and so require less weight and strength. Model 99 is built with five-passenger touring body and with a two-passenger roadster body. In either case the only difference is that the roadster has a wheelbase of 112 inches while the touring car is five inches longer. The motor is of 40 horsepower, having individually cast cylinders with a bore and stroke of 4⅛ and 5¼ inches, respectively.

The Lambert friction drive mechanism remains exactly as heretofore; a large disk driven directly by a shaft coupled to the motor shaft by a universal joint drives a second disk, of the same diameter, mounted on a shaft extending across the frame of the car. The driven disk is slidable on the cross shaft which it turns, and the nearer it is moved to the periphery of the driving disk the faster it rotates and, of course, the faster the car will be driven, provided the engine speed remains unchanged. A "silent" chain runs from a small sprocket on the cross shaft to a large sprocket on the rear axle which attaches to the differential housing.

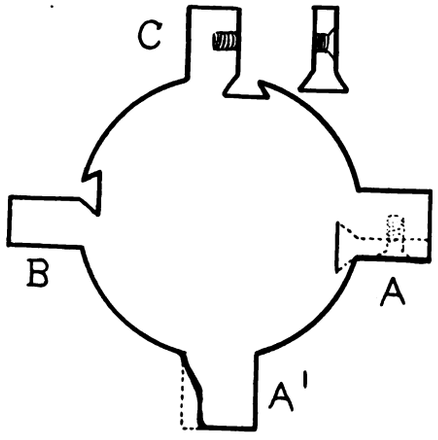
The smaller Lambert cars, both of which are five-passenger touring models, are designated as models 10 and 40. Model 40 has a wheelbase of 112 inches and is equipped with a motor rated at 30-35 horsepower, its bore and stroke being 3¼ inches and 5¼ inches, respectively. Model 10 is the smallest car of the line, having a 25 horsepower motor with cylinders 3¼ x 4¼ inches bore and stroke; it carries five passengers in its compact and attractively designed body.

The two larger cars, the model 99 touring car and the roadster, are priced at $1,250, model 40, 30-35 horsepower touring car, at $1,030 and the model 10, 25-horsepower machine costs $1,300. The regular equipment of all models includes two large acetylene headlights and two oil side lights and an oil tail lamp, all finished in black enamel and nickel, demountable rims, coat rail, aluminum-covered front floor-boards, wheel-puller, jack, horn, set of tools and license number.

PUTTING NEW DRIVE FACES ON WORN HUB CLUTCHES

Quick Expedients for Temporary Service—Permanent Repairs That Make Parts Almost as Good as New.

There are two principal methods of forming the driving ends of the live shafts of rear axles. In one the driving ends of the shafts are "upset" or spread out by hammering while hot, and the heads so formed are machined to make dogs which engage in notches in the hubs of the wheels. In the other method, which is far more commonly used and is considerably less expensive to manufacture, the ends of the shafts are squared and are connected with the



REPLACING WORN DOGS

wheel hubs by means of floating dogs, the teeth of which fit into corresponding notches in the hub members.

In course of time the faces of the dogs, whether they are of the separate type or are formed integral with the shafts, become worn out of square. The thrust, when this has occurred, is not direct, and, moreover, a back-lash develops in proportion to the amount of wear. The effect of the back-lash is harmful to the entire transmission system, for in starting there is a jar or shock which is transmitted through the live shafts to the differential, the propeller shaft and its universal joints, the gearset, the clutch and the engine itself. In time the keys on the various charts and the splines on the gearshafts are very likely to be affected by the constantly recurring shocks.

If the dogs are formed integral with the shafts and the shafts are both of the same length, they can be reversed—that is, the right shaft can be put into the left side of the axle, and vice versa. This will bring into play new driving faces on the dogs. If separate dogs are used, they can be changed around to opposite sides, with the same result. While it is a good thing to do this as a temporary expedient, the main trouble, which is the back-lash, is not eliminated. It can be taken up, however, by means of the method shown in the accompanying illustration.

At A1 is shown the effect of wear on one of the driving faces; the dotted lines indicate the original form of the face. To make the repair, the irregular fillet in the corner is cut away and the face neatly squared, and a dovetail undercut, as shown at B, with hacksaw and file. Filling pieces are made of tool steel or 3 per cent. nickel steel, as shown at C, and the filling pieces and dog faces are drilled for machine screws; the former are countersunk to take the screw heads and the latter tapped for the threads. The faces of the filling pieces are left a trifle high.

If the dog faces are worn it is only to be expected that the corresponding faces in the notches will be worn, and the job is but half done when the dogs are re-faced as described. A similar process can be employed for facing the worn places in the hubs, when the drive will be practically as good as new—perhaps a little better, for the steel wear-pieces may be of better stock than the original parts.

Californian Solves Repair Problem.

Eliminating the repair bill is an object in the life of nearly every motorist, but the only efficient solution found thus far is that credited to H. H. Hart, according to dispatches from Oakland, "across the bay" from San Francisco. Whether it really happened is not essential; it is a good story, anyway.

The car cost $4,500, and inside of a comparatively short time had run up a repair bill of $2,000, which accounts for Hart's determination to "solve" the problem at any cost; it may also be stated that the cost is the principal drawback in the solution. One day last week Hart called his chauffeur, James Litz, into the library of the Hart home and said

"Take that car out and lose it."

"I can't lose it," replied Litz. "It's too well known; somebody would find it and bring it back again."

"Then sink it in the middle of the bay," said Hart.

For the first time in weeks the car ran smoothly to the ferry station and was driven aboard the boat. Litz asked the mate to show him the deepest spot in the harbor.

When the boat reached the designated place Litz ran the car to the vessel apron, pulled wide the throttle and leaped to the deck. The automobile went into the bay, and the repair proposition for that particular car was settled forever.

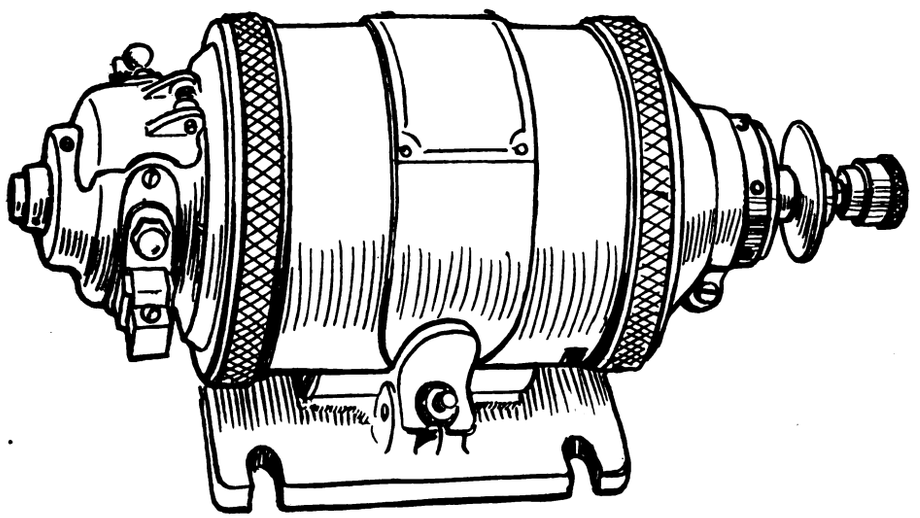
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APPLYING THE ENERGY THAT STARTS AND LIGHTS

Pros and Cons of One and Two Unit Electric Lighting and Starting Systems Discussed and Their Advantages Pointed Out—The Modicum of Care Necessary to Keep Them "Right" and How to Doctor Troubles.

(This is the tenth of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render easier their care and repair by the dealer and owner alike.)

Though there is no controversy regarding the desirability of electric lighting and engine starting systems, agreement being apparent that such systems are a logical and necessary development, opinion is more or less divided as to whether the generator and motor best may be combined in a single instrument or whether it is better to separate them and make of them distinct units which are independent of each other insofar as that is possible. There is much to be said for and against both methods of construction; manufacturers themselves are about evenly divided.

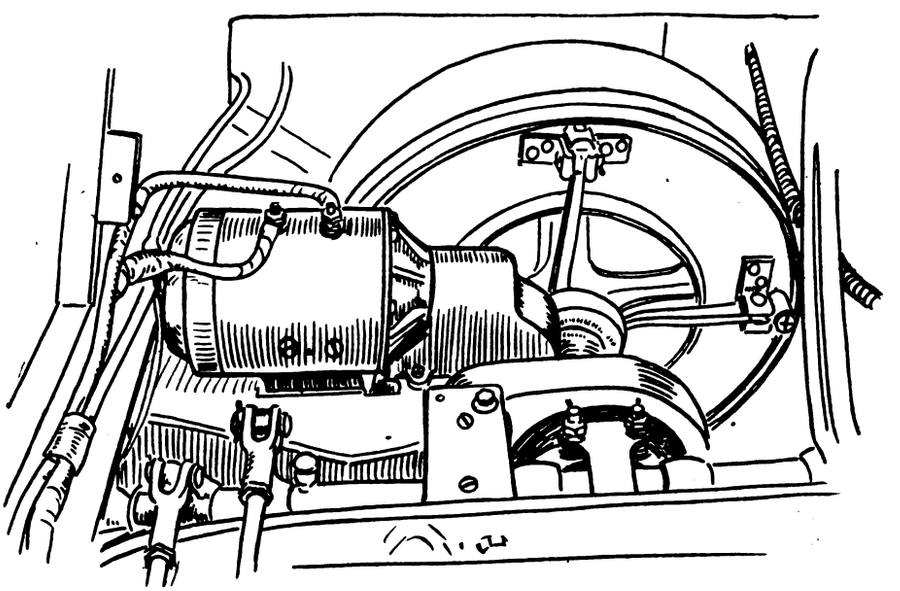


HARTFORD GENERATOR SHOWING COMPACTNESS AND COMPLETE ENCLOSURE

Single and Double Units Compared.

In addition to being dependable and serviceable and of minimum weight, it goes without saying that any such system, whether it be of the single unit or the two unit type, must be as simple as possible and above all, it must be accessible, for none can be expected to run forever without any attention or without reasonable care. Apparently the ease with which a system can be cared for and the facility of making repairs without disturbing any more of the system than is directly concerned with the trouble in hand, is the rock upon which designers split. Little, if anything, is said anent the efficiency of the two methods of construction, for the reason that there is little to be said; the efficiency of one can be made and is made just as high as the efficiency of the other. Similarly, little controversy wages over weight, for it is fairly well established that the weight of one need be no more than the weight of the other.

The single unit system has the advantage that the motor and generator are combined in a single compact instrument which may be located with slightly less special provision for its reception and with, perhaps, distribution of the wiring over a smaller space. This is offset in the two unit system, however, by the fact that each unit is smaller than the single combined unit, and lighter, and not infrequently it is easier to find proper locations for the smaller units than it is for the large one. Incidentally, though the advantage may be a small one, the splitting up of the system into two units might permit of a slightly better distribution of weight.



DISPOSITION OF HARTFORD STARTER WITH RELATION TO FLYWHEEL

Neither Type Need be Complex.

Whether or not the combination of motor and generator really adds complication to the system, comparing both types of systems in their completeness, is open to question. There are some motor-generator systems that are more complicated than separate unit systems, and vice versa. Be that as it may, however, mere compactness, such as is in evidence in the average motor-generator system, is not necessarily an indication of complexity, which fact already has been made plain in the ninth of the series of articles dealing with the subject which appeared last week in Motor World. Either type of system, regardless of its complexity, which in the majority of cases is merely apparent complexity bred of the smallness of the parts and their close incorporation, can be easily understood in a manner that will permit the average dealer or owner to take entire charge without the

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slightest fear of untoward complications resulting, provided sufficient interest is taken to obtain the necessary education.

The two unit system has an apparent advantage over the single unit system, in that the derangement of either of the units does not necessarily impair the action of the other. It will be appreciated, of course, that failure of the generator unit will permit the motor starter and the lights to be used only until the battery is exhausted. But with the engine starting unit out of commission temporarily, the generator will continue to generate current which may be used to light the lamps.

Motor-Generators Easy to Care for.

With the single unit system, on the other hand, there is the possibility that any derangement which may occur will temporarily put both branches out of commission. Fortunately, however, such machines are so ruggedly constructed and there is so very little that can get out of order—there is but the one moving part—that trouble is the exception rather than the rule. Generally, when trouble manifests itself it is not with the generator or the motor, but is confined to some other portion of the system, such as the circuit breaker, the fuses or the wiring. One of the advantages of the single unit system is that attention can be centered on the one machine; the care of one automatically means the care of the other.

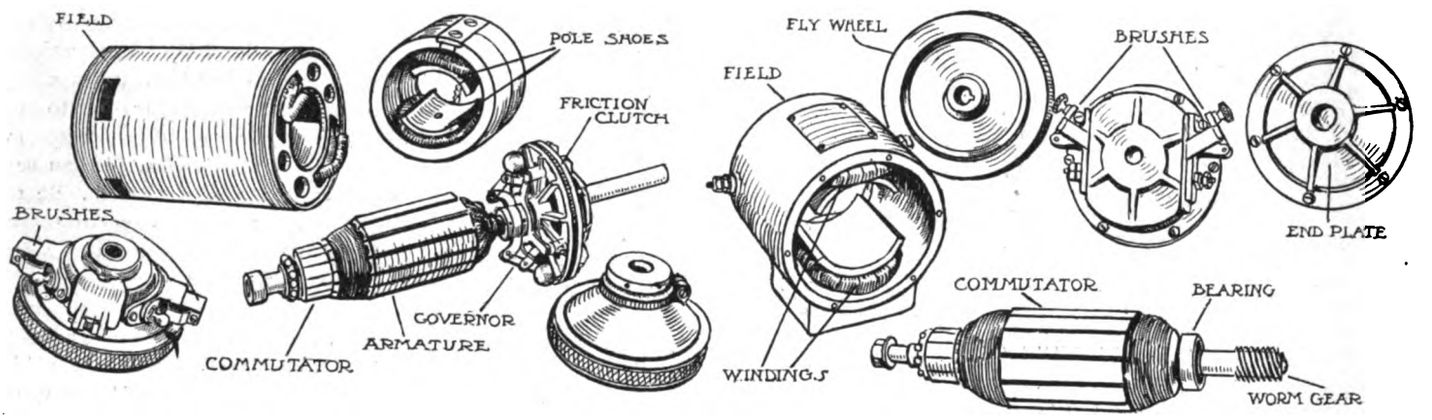
Method of Obviating Reversed Polarity.

In the Hartford lighting and starting system, which is manufactured by the Hartford Suspension Co. of Jersey City, N. J., separate machines are used for the generation of current and for power to start the engine. Both the generator and the electric motor are exceptionally small and light units, and the system is otherwise distinctive in several respects.

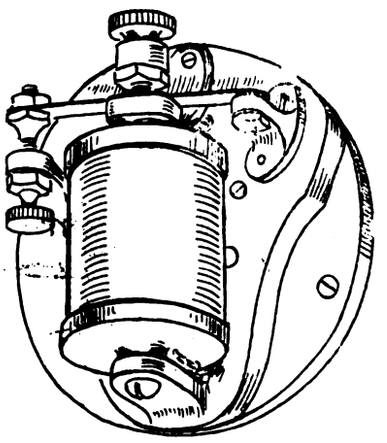
The generator is of the type in which the fields are permanent magnets supplemented by electro-magnetic pole pieces, the particular advantage of the system being that the permanent magnet field insures rapid "building up" and at the same time obviates the possibility of the polarity of the field being reversed in the event of the battery inadvertently being wrongly connected up.

Friction Clutch that Governs Output.

By way of obtaining constant voltage and thereby protecting the battery from the high charging rates such as would obtain if the generator were direct connected and the car engine run at high speed, an automatic centrifugal clutching governor is employed. It is shown by the accompanying illustration and consists of two plates spring pressed together, one of them being faced with a friction material and the other being plain. In operation, when the speed of the armature reaches a predetermined limit, approximately equivalent to a car speed of 15 miles an hour, the weights fly out under the action of centrifugal force, thereby separating the clutch plates.



HARTFORD GENERATOR AND MOTOR DISASSEMBLED SHOWING FEATURES OF COMPONENT PARTS OF EACH



CUT-OUT IN DETAIL

The electric motor which forms the other unit in the system is of the series wound type, this method of winding having been chosen by reason of the fact that the torque increases in proportion to the load placed upon it. The whole machine measures but 7½ x 4½ inches overall dimensions, though despite this fact it is rated at 1/3 horsepower. The high rating is due to the speed at which it operates, 7,000 revolutions a minute being normal speed. In order to permit this high speed, the motor is connected to the gasolene engine through the intermediary of a double reduction gearing in which the first step is obtained through worm gearing on the armature shaft and the second step through orthodox spur gearing.

Wherein Flywheel Increases Efficiency.

To increase the efficiency of the motor and permit it to maintain its high rotative speeds during the moments when the pistons of the gasolene motor are passing compression centers, it is fitted with a small flywheel which weighs approximately 4½ pounds. The electric motor drives the gasolene motor through a roller clutch mechanism which is positive in action. To obviate the possibility of damage resulting in the event of back-fires, a friction clutch is interposed between the electric motor and the gasolene engine. The driving gears are always in mesh, and the rotative speed of the gasolene motor under the power of the engine starter is from 40 to 70 revolutions a minute, the reduction being 125 to one.

The Three-Wire System Made Plain.

The remainder of the Hartford system consists of a combination fuse and switch block which is mounted on the dash, and a combination volt-ammeter, which also is dash mounted. The automatic cut-out is enclosed in a tight housing and mounted between the meters on the meter board. The system operates on what has been styled the three-wire plan. That is to say, the storage battery is divided into two units of six volts each, with the lighting load split up between two in such a way that all the lights operate at six volts. For engine starting purposes, however, the two units are connected in series, giving a total

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voltage of 12. The starting motor is placed in operation by depressing a starting button located on the dash or in any other convenient place.

How to Adjust Cut-Out Mechanism.

In caring for the Hartford system, it should never be necessary to touch the cut-out. Its contacts are set at the factory and the adjustments should not be disturbed unless the device gives unmistakable evidences of derangement. Owing to the fact that contact is made and broken only at long intervals, the points are subjected to little or no wear, and consequently need not be touched. If they show signs of burning or pitting or corrosion after long service they may be cleaned with a fine flat file or with a couple of pieces of fine emery cloth glued to opposite sides of a piece of thin Bristol board.

and carbon composition designed to run for indefinite periods without adjustment or wear. In fact, the adjustment is automatic, the tension being maintained constant, regardless of the length of the brushes. Another excellent feature of the design is that the brushes and brush holders may be removed together and intact without the necessity for disturbing any other part of the generator.

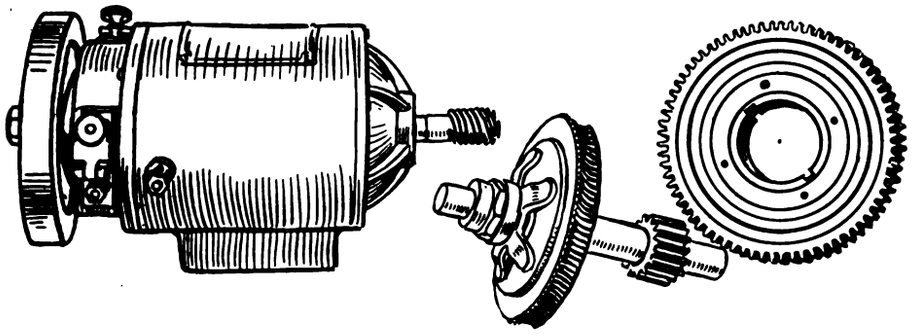
Caring for Commutator and Brushes.

Periodically, the brushes should be taken out of their holders and cleaned with a cloth dampened with gasolene and all accumulations of carbon dust or road dust removed. The commutator should never be touched as long as it exhibits a glazed, brownish appearance, for it then is in the very best condition. If it appears dry and scratched, however, the brushes first should

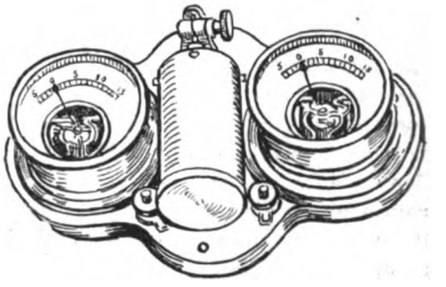
amined first to make sure that they are bearing properly on the commutator and that their connections have not become broken or loosened as the result of vibration. If such measures do not induce the machine to generate, and the rest of the wiring is intact and the fuses have not "blown," it is the better part of wisdom to ship the generator back to the manufacturers, for it is likely that the trouble is beyond the repair of anyone other than an expert.

Fuses that Act as "Tell-Tales."

As the system incorporates a fuse block, the fuses should be suspected first if the lights go out or if they cannot be lighted. New fuses are carried in the lid of the fuse block and can be inserted in less than a minute. Before they are put in place, however, examination of the system should be made and the trouble which caused the fuse



HARTFORD MOTOR STARTER SHOWING WORM AND SPUR GEARING



HARTFORD METERS AND CUT-OUT

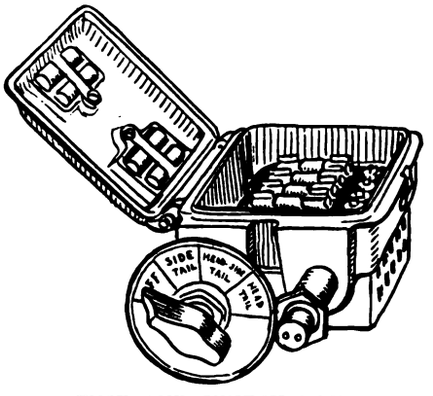
When the device is operating properly—its operation may be examined by removing the cover—the contacts will come together when the car speed becomes approximately 15 miles an hour. If, by reason of wear, they do not come together the adjustment of the lower contact may be altered a very little bit, so as to bring the contacts a fraction of an inch nearer together when the cut-out is open. This will cause them to come together a little sooner.

Simplicity of Governing Device.

The clutching mechanism in the generator is rugged in construction and is so simple in action that there is nothing to get out of order. It is completely enclosed and, as it cannot be gotten at, that fact may be taken as an indication that it is not supposed to be gotten at. Similarly, as the armature shaft is carried in ball bearings its requirements in the way of lubrication will be exceedingly moderate. A few drops of fine machine oil about once in every 1,000 miles will suffice. More than that should not be used, for there is danger that it may be thrown out onto the commutator and brushes.

The commutator and the brushes are the only parts which need and should have periodic inspection. The brushes are a metal

be examined to make sure that there are no hard particles imbedded in their ends, and a piece of No. 00 sandpaper held against the commutator while the machine is run-



FUSE AND SWITCH BOX

ning. When the commutator exhibits a uniformly bright surface the sandpaper should be removed. Applying a minute quantity of best quality vaseline on a piece of felt held against the commutator while it is rotating is good practice, only care should be taken not to use too much lubricant. Oil never should be used, because it is bad for the insulation.

In the event of the generator failing to generate, the brushes always should be ex-

to "blow" discovered and remedied. If the lamps can be lighted but cannot be made to burn with their customary brightness, the cut-out had best be examined to make sure that it is performing the functions for which it is intended. If it becomes inoperative through any fault, the battery will gradually discharge itself either through the generator, if the contacts are stuck together, or through the lamps if the contacts do not come together as they should. It should be remembered that the voltmeter and the ammeter are placed in the circuit to serve as indicators of the operation of the system.

The electric motor of the Hartford system is about the same size as the generator, and like it, is armor clad and completely dirt- and water-proof. As there is but one moving part in the machine, that part being the armature, there is little or nothing that can get out of order or give trouble. The motor, like the generator, is fitted with a pair of brushes and a commutator, of course, and these parts are the only ones that should ever require attention. The care that has been outlined for the generator applies also in the case of the motor, and consists essentially in keeping the brushes clean and the commutator free from accumulations of dirt and oil.

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COURT SAYS CITIES NEED NOT POST SPEED WARNINGS

Untermyer, Fined $10 in New York City, is Beaten in Court of Appeals — Provision of State Law Sustained.

Despite the popular understanding that the automobile law of New York State exempted cities of the first class from the posting of speed limit signs, which are required in other communities, Irwin Untermyer, son of Samuel Untermyer, one of the wealthiest and best known attorneys of New York State, felt called on to test the law and late last week he received the answer which nearly everyone expected he would receive. In other words, the law and the popular understanding were upheld by the Appellate Division of the Supreme Court, which confirmed the fine of $10 imposed by the lower court on Untermyer for speeding at the rate of 30 miles an hour on upper Broadway. In disposing of the suit the court remarked what is plain to all reasonable people—i. e, that it is practically impossible to "sign post" a city of such enormous proportions as New York. Justice Clark, who handed down the decision, says:

"The point raised here is that as it is not shown that signs were posted, the local ordinance does not apply; the magistrade had no jurisdiction, and the speed limit is therefore covered by section 207, which permits 30 miles an hour. The answer is that the State act expressly provided that nothing in this article shall impair the validity or affect any of the ordinances, adopted and prescribed pursuant to law in any city of the first class.

"The appellant claims that the grammatical construction of the section compels that the condition regarding the posting of signs, still required in other cities and incorporated villages, to be also applied to cities of the first class. I do not think so. That statute is awkwardly phrased, but I think it is clear that special provision has been made for cities of the first class, permitting them to pass such ordinances as they please, and that there is no condition in regard to posting signs. If this is not so there is no speed limit in the city of New York except that provided by the general law.

"I think the act was modified directly in view of the former decisions. It was recognized that in the enormous territory of the city of New York the posting of signs would be extremely difficult if not practically impossible, and, therefore, the provision eliminating cities of the first class from the limitations of the law in respect to traffic ordinances was made comprehensive and exclusive. It follows that the judgment appealed from should be affirmed."

Adopt Constitution and Choose Name.

Although no officers have as yet been elected, a name, at least, has been adopted for the organization of New York automobile and accessory dealers which is to boost and boom the automobile into more publicity through the medium of races and other contests. At the meeting which was called for and held on Monday afternoon, 25th inst., it was unanimously decided that it be styled the Motor Dealers' Contest Association of New York. The purpose of the meeting, primarily, was to adopt a constitution and bylaws drawn up by a committee of seven appointed at the first meeting on Wednesday last, 20th inst. After lengthy discussion the constitution and bylaws were adopted, and it was decided to elect a board of directors of 11 stockholders which should, in turn, appoint an executive committee of eight members. Among other routine business that was transacted, it was agreed to increase the capital from $10,000 to $30,000, each stockholder to be limited to three shares. All unsold stock is to be retained in the treasury, and if necessary retired to reduce the capital stock.

Lupton's Suit Brought to a Close.

Although the United States Supreme Court reversed the decision of the Circuit Court and on August 7 last directed that a verdict of $733.50 in favor of the Automobile Club of America be transformed into one of $709.52 for David Lupton's Sons Co., contractors, of Philadelphia, it was not until this week that the order complying with this mandate was asked of and granted by the lower branch of the judiciary. The present order directs the clerk of the court to enter judgment for the Lupton company. The suit was begun August 30, 1907, and grew out of a contract entered into August 17, 1905, whereby the Lupton company was to furnish metal window sashes in the club's house, which was about to be erected in New York City. The agreed price was $10,344. When the contract was nearly completed union trouble arose and the Luptons claimed they were barred from completing the work and asked damages. One defense was that the contract was not binding because they were a Pennsylvania corporation and had not taken a license to do business in New York State. The answer to this is that it was interstate commerce. The court evidently upheld this view and ruled that the Philadelphia contractors were within the law in their inter-city transaction

WISCONSIN'S REGULATIONS FOR SMALL TOWN GARAGES

Code Is Simple and Is Applicable to Garages Outside the Larger Cities —Fire Prevention is the Primary Object.

While New York, Chicago and various other large cities have adopted garage regulations that are almost infinite in detail, it follows that many of the requirements are wholly unapplicable in towns of lesser population. In Wisconsin, however, the State Fire Marshal has evolved and promulgated a set of rules for general application in that commonwealth and has ordered copies posted in all garages. The regulations, 13 in number, are:

None but fireproof buildings should be used as a garage; never any building, part of which is used for public meetings.

The floors should be of cement.

Heat with steam. Allow no flame, fire or fire heat, stove, boiler, furnace, forge or torch in the garage.

Use electric, incandescent lights, protected by wire basket guard; never use lamps, candles, lanterns or other open lights.

Store all gasolenes in an approved underground tank, equipped with standard pump. Never keep gasolene in open vessels, or allow gasolene to run or drip on the floor or into drainage system.

Use approved safety cans or approved portable tank in transferring gasolene to cars.

Make sure that gasolene tank in the car is free from leaks and that the caps are secure.

Provide standard metal waste cans on each floor, especially near the work bench, for oily waste. Destroy this waste each evening.

Allow no shavings, refuse or waste to accumulate.

For private fire protection, keep pails of sand with scoop and approved chemical fire extinguishers on each floor.

Beware of carburetter flooding.

Absolutely permit no smoking in the garage.

Always be careful and vigilant.

Large placards have been prepared at the cost of the State and given to all fire chiefs for distribution to garages. One copy of the placard has also been mailed to each garage, to prevent omissions.

Hale Heads Waco Motor Club.

Dr. J. W. Hale has been elected president of the Waco (Tex.) Motor Club. The other officers are: Vice-president, C. Ivey; secretary, R. Lane; treasurer, W. Seley.

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MOROSS ISSUES DECLARATION OF WAR ON BERNA OLDFIELD

Burman's Manager Crosses Rockies and Hurls Legal and Printed "Bombs"—Waves Broken Contract at the "Speed King."

War, cruel war, has been declared between Barney Oldfield, contest promoter and "star" performer, and E. A. Moross, likewise race promoter, and manager of Robert Burman. Moross threw the first bomb into the enemy's camp when he instituted a petition for an injunction restraining Oldfield from holding a scheduled meet on the Tanforan track at San Francisco, Cal., on Sunday, 17th inst., but somehow the missile missed fire, for Judge Seawell refused to grant the petition and the contest was run as advertised.

The ill feeling between the two managers is the natural development of a situation where two persons in the same line of business try to do business in territory only sufficiently large for one. Moross alleges that when, in the spring of 1910, Oldfield sold Moross his stable of racing cars—for the large sum of $30,000, it was then alleged—the bill of sale carried with it the guarantee that Oldfield—who had been "outlawed" by the A. A. A.—had retired, and that he would stay retired. On the grounds that Oldfield had broken his contract, Moross applied for the injunction which, as before stated, was denied. Moross also asserts that Oldfield "froze out" Burman, and prevented his entering the meets which Oldfield promoted by limiting the piston displacements of the cars eligible to 450 inches, whereas Burman's smallest car has a piston displacement of 600 inches.

In his second strategic move, Moross "ambushed" the spectators who attended the Tanforan meet and presented them with dodgers announcing in very large and very bold letters that, although Oldfield was afraid to meet Burman, the latter would force the issue at Tanforan, but the move went the way of the previous onslaught, and Oldfield and his troupe were the sole entertainers. As a final thrust, Moross enlisted the aid of P. J. Walker, the A. A. A. representative, who decreed that in the future if Oldfield is to hold closed meets they must be advertised as such. Oldfield, for his part, has very little to say, save that he is willing to drive an exhibition mile at the same meet but not at the same time as Burman. This, however, is not entirely satisfactory to the other side, so a "challenge" has been drawn up and distributed in dodger form, wherein Oldfield is invited to participate in Moross's meet at Emeryville, just across from San Francisco, on November 24th, and to meet Burman in competitive events from 5 to 25 miles. Just to show that Burman could do it, Moross staged an impromptu meet at Tanforan on Thursday, 21st, and the "star" drove a mile in 48⅗ seconds, slightly better than Oldfield's time made on Sunday, 17th inst.

Oldfield "Whole Thing" at Sacramento.

Driving a Benz, Barney Oldfield was the "whole thing" at his own racemeet at Sacramento, Cal., on Saturday, 16th inst. He accounted for the three competitive events and also made the fastest times in the mile time trials, negotiating one mile in 50 seconds. The summary:

Three miles, for cars with displacements of under 450 inches—Won by Barney Oldfield (Benz); second, Fred Melaun (Cino). Time, 2:58⅕.

One mile, time trials—Barney Oldfield (Christie), time, 0:49; Fred Melaun (Cino), time, 0:59⅘.

Five miles, free-for-all handicap—Won by Barney Oldfield (Benz); second, A. J. Edwards (R. C. H.). Time, 4:52⅕.

One mile, against circular dirt track record of 47⅗ seconds—Barney Oldfield (Christie). Time, 0:50.

Six and one-quarter miles, Australian pursuit—Won by Barney Oldfield (Benz); second, A. J. Edwards (R. C. H.); third, Fred Melaun (Cino). No time taken.

Four Tradesmen Disciplined by A. A. A.

The Chicago Motor Club's Around Lake Michigan Tour, which was run October 21st to 25th, was indirectly responsible for the suspension by the contest board of the A. A. A. until June 1st, 1913, of three manufacturers and one dealer. The Coey-Mitchell Auto Co., of Chicago, which deals with Coey-Mitchell cars, and the Stutz Automobile Co., which handles Stutz cars in the Windy City, were disqualified for not starting the cars which they had entered, and the Moline Automobile Co., East Moline, Ill., and the Staver Carriage Co., Chicago, were given the same punishment for advertising the performances of their respective products as the performances of stock cars, whereas the contest was run under Grade 3 rules.

Electric Vehicle Club Enlarges its Scope.

The Electric Vehicle Club of Boston has changed its name to Electric Motor Car Club of Boston. The change is one of the outgrowths of the adoption of the new constitution, which, among other things, divides the membership into three classes: (1) those deriving their income from the sale of electric automobiles and accessories; (2) private owners and operators, and (3) representatives of trade and daily papers.

BARNEY OLDFIELD HUMBLED BY COOPER IN THREE RACES

"Speed King" Badly Beaten in California After Injunction Fails to Prevent Meet—Burman and Moross Look On.

"Injunctioning" having failed to net E. A. Moross the satisfaction of preventing the running of Barney Oldfield's racemeet on the Tanforan one mile track at San Francisco, Cal., on Sunday, November 17th, or of forcing Oldfield to give "Bob" Burman a "look in," so to speak, Moross and his star did the next best thing—they witnessed the racemeet and, presumably, paid the price of admission. And if Dame Rumor has it correctly, great was their satisfaction, for they had the pleasure of seeing Oldfield well trounced in each of the three competitive events in which he started; Earl Cooper, in a Stutz, performing the trouncing, and winning nearly all the laurels of the day.

Cooper's victories included a five-mile contest for cars with displacements of under 451 inches, a five-mile free-for-all, and the leading event of the day, the 25-mile free-for-all. A match race between A. J. Edwards (R. C. H.) and Maurice Gaston (Maxwell) resulted in a victory for Edwards, who completed the distance in 6:20. Two-mile time trials were driven by Fred Melaun (Renault) and Earl Cooper (Stutz) in 2:05⅗ and 1:53⅗, respectively; Oldfield failed to lower the record for the distance of 1:35⅗ on a circular dirt track; his time was 1:43⅖. A single mile time trial, which Oldfield completed in 0:0⅗ seconds, driving the Christie, marked the close of the meet. The summary:

One mile, time trial—Barney Oldfield (Christie). Time, 0:50⅗.

Five miles, for cars with displacements of under 451 inches—Won by Earl Cooper (Stutz); second, Barney Oldfield (Benz). Time, 4:48⅕.

Two miles, time trial — Fred Melaun (Renault). Time, 2:05⅗.

Two miles, time trial—Earl Cooper (Stutz). Time, 1:53⅗.

Five miles, free-for-all—Won by Earl Cooper (Stutz); second, Barney Oldfield (Benz). Time, 5:20⅕.

Two miles, against circular dirt track recodr of 1:35⅗—Barney Oldfield (Benz). Time, 1:43⅖. No record.

Five miles, match race—Won by A. J. Edwards (R. C. H.); second, Gaston Maurice (Maxwell). Time, 6:20.

25 miles, free-for-all—Won by Earl Cooper (Stutz); second, Barney Oldfield (Benz). Time, 25:42.

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1,018,412. Fluid-Actuated Clutch. Rudolf Diesel, Munich, Germany. Filed Oct. 17, 1910. Serial No. 587,514. Extensible vanes which exert a drag on a fluid.

1,018,447. Valve Mechanism. Pierce D. Schenck, Dayton, Ohio. Filed Apr. 23, 1907. Serial No. 369,744. Carburetter air-inlet valve controlled by the vibration of the motor.

1,018,454. Tire. Willard Irving Twombly, New York, N. Y., assignor, by mesne assignments, to Twombly Motors Company, New York, N. Y., a Corporation of New York. Filed Apr. 2, 1910. Serial No. 553,104. Flexible metallic casing with an inflatable inner tube.

1,018,467. Automobile Wheel. Alfred R. Wylie and James G. Wright, Big Spring, Tex. Filed Oct. 11, 1909. Serial No. 522,121. Pneumatic hub.

1,018,470. Fender for Motor Vehicles. William Young, South Bellingham, Wash. Filed Apr. 28, 1911. Serial No. 623,994. Frame for preventing person from being run over.

1,018,481. Gas Engine. Herbert Cooper, Brooklyn, N. Y. Filed Dec. 2, 1910. Serial No. 505,201. Pair of cylinders with pressure-controlled scavenging valves.

1,018,482. Vehicle Frame. Herbert Cooper, Brooklyn, N. Y. Filed Dec. 30, 1910. Serial No. 600,150. Combined wood and metal frame.

1,018,498. Curtain for Vehicles. Frank H. Ilse, Chicago, Ill. Filed June 17, 1911. Serial No. 633,781. Drop curtain and means of support.

1,018,504. Balanced Speedometer. Mathias J. Klein, New York, N. Y., assignor of sixty one-hundredths to Hugo B. Roelker, New York, N. Y. Filed Mar. 5, 1910. Serial No. 547,466. Centrifugal force speedometer with two balanced governors.

1,018,532. Internal Combustion Engine. Willard Irving Twombly, New York, N. Y., assignor to Twombly Motors Company, New York, N. Y., a Corporation of New York. Original application filed Feb. 18, 1910, Serial No. 544,546. Divided and this application filed Sept. 12, 1910. Serial No. 581,632. Telescopic tubing housing for valve mechanisms.

1,018,535. Differential Gearing. Hugh L. Warner, Muncie, Ind. Filed Sept. 25, 1909. Serial No. 519,506. Split gear housing with alternate thick and thin portions in the wall to provide anchorage for pinion shafts.

1,018,542. Supporting Device for Speedometer Driving Mechanism. Rollin Abell, Boston, Mass. Filed Mar. 9, 1910. Serial No. 548,226. Split collar clamp for attachment to axle.

1,018,590. Tire Holder. Andreas M. Sonnichsen, Milwaukee, Wis., assignor to Auto Parts Manufacturing Company, a Corporation of Wisconsin. Filed June 1, 1911. Serial No. 630,557. Telescopic tubular supports.

1,018,620. Clutch. Frank S. Jones, Pasadena, Cal. Filed Dec. 29, 1910. Serial No. 599,955. Friction cone clutch and means of engagement.

1,018,626. Process of Manufacturing Anti-Slipping Tires for Motors and Other Vehicles. Andre Michelin, Paris, France. Filed Apr. 2, 1907. Serial No. 366,060. Waterproofed leather used as an ingredient in the composition of the tread.

1,018,718. Vehicle Wheel. Archibald A. MacDonald, New Glasgow, Nova Scotia, Canada. Filed July 29, 1911. Serial No. 641,331. Helical springs supporting slidable tread blocks.

1,018,735. Resilient Tire. Frank Zimmermann, New York, N. Y., assignor to Francis Keil & Son, New York, N. Y. Filed May 12, 1911. Serial No. 626,746. Solid rim tire floating on helical springs which serve for attachment to the hub.

1,018,766. Carburetter. Harry E. Kerr, Detroit, Mich. Filed May 22, 1911. Serial No. 628,679. Single jet carburetter provided with an adjustable deflector for controlling passage of air.

1,018,742. Internal Combustion Engine. Clarence A. Dawley, Plainfield, N. J. Filed Sept. 3, 1908. Serial No. 451,563. Two-cycle engine with special means for providing complete scavenging.

1,018,772. Pneumatic Clutch-Controller. Walter D. Nickum and Martin Claussen, Los Angeles, Cal. Filed May 10, 1911. Serial No. 626,355. Pump operated by clutch lever.

1,018,774. Vehicle Wheel. Israel Pascal, Montreal, Quebec, Canada, assignor of sixtenths to Moses Albert, Montreal, Canada. Filed May 6, 1911. Serial No. 625,435. Hollow metallic tube provided with slots through which resiliently supported spring metal loops project.

1,018,814. Vehicle Tire. Henry H. Durr, Springfield, Ohio. Filed Mar. 29, 1911. Serial No. 617,748. Sectional block tire.

1,018,890. Clutch. Frederick S. Ellett, Elmira, N. Y. Filed Feb. 16, 1911. Serial No. 609,015. Multiple disk clutch.

1,018,895. Tire. Edwin H. Freas, Philadelphia, Pa. Filed Aug. 4, 1910. Serial No. 575,444. Sectional block tire.

1,018,953. Internal Combustion Rotary Engine. William Barnes, San Francisco, Cal. Filed June 15, 1909. Serial No. 502,349. Fuel admission to revolving cylinders through tubular connecting rods.

1,018,973. Wind Shield. John O. Hofbauer, New York, N. Y. Filed Feb. 10, 1911. Serial No. 607,766. Frame supported on movable sleeves on the adjustable supporting rods.

1,019,007. Distance and Speed Meter. Mathias J. Klein, New York, N. Y., assignor of sixty one-hundredths to Hugo B. Roelker, New York, N. Y. Filed Oct. 29, 1910. Serial No. 589,723. Means for adjusting for various wheel diameters.

1,019,061. Pole Reversing Timer or Distributer. Edwin S. Lincoln, Brookline, Mass., assignor to Electric Goods Manufacturing Company, a Corporation of Maine. Filed May 13, 1911. Serial No. 627,010. Pole changing switch combined with commutator.

1,019,062. Autotruck Body. Henry Lohse, New York, N. Y. Filed Nov. 14, 1911. Serial No. 660,177. Angle iron frame with wood cross members.

1,019,101. Wheel. John E. Strietelmeier, Cincinnati, Ohio, assignor to The Ideal Wheel Company, Cincinnati, Ohio, a Corporation of Ohio. Filed Dec. 14, 1910. Serial No. 597,286. Semi-elliptic springs as spokes.

1,019,122. Radiator. Jacob B. Beam, Punxsutawney, Pa. Filed Feb. 16, 1911. Serial No. 608,944. Vertical tube radiator.

1,019,128. Carburetter. Charles O. Bullock, Cleveland, Ohio. Filed Apr. 6, 1911. Serial No. 619,197. Single jet carburetter with sliding sleeve throttle valve.

1,019,167. Lubricator. Charles W. Manzel, Buffalo, N. Y., assignor, by mesne assignments, to J. L. Osgood, Buffaol, N. Y. Filed Aug. 13, 1906. Serial No. 330,372. Compound pump.

1,019,177. Internal Combustion Rotary Engine. Rolla R. Morton, Fresno, Cal. Filed Feb. 25, 1909. Serial No. 480,049. Rotary piston.

1,019,192. Vehicle Wheel. Adolph Schick, Wheeling, W. Va. Filed Oct. 20, 1910. Serial No. 588,102. Helical springs supporting non-yieldable rim.

1,020,518. Motor Vehicle. Eric S. Sandgren and Charles F. Case, Detroit, Mich., assignors to Oliver Motor Car Company, Detroit, Mich., a Corporation of Michigan. Filed Sept. 30, 1910. Serial No. 584,673. Means of supporting motor on cross members.

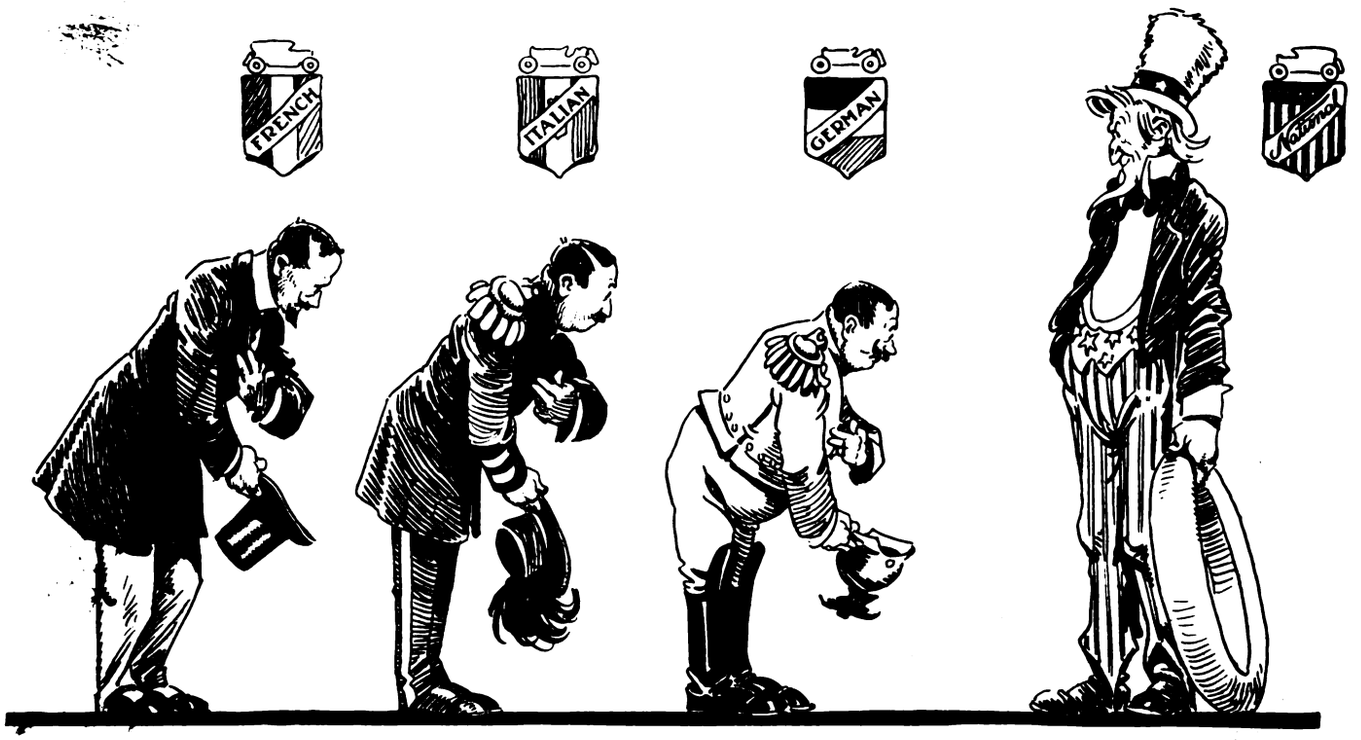
1,020,522. Circuit Making and Breaking Device. Winthrop A. Stiles, Philadelphia, Pa. Filed Oct. 11, 1909. Serial No. 522,145. Rotary break.

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National

Conqueror of Europe **Defender of America**



As in Races—So in Daily Service

the National cars lead the world in actual worth. But for the consistent, swifter and surer National car, Europe would be supreme in leadership—but the National is true to its trust and conquered the foreign invaders in the only race entered by its maker this year—the hardest of all—500 mile sweepstakes. You are familiar with its marvelous demonstration of power, speed, reliability and stamina in this event as in past years. Of all the races this year of 250 miles or more foreign cars won all but the one entered by the National. In the less dramatic race for leadership now in style, comfort, noiseless operation and daily service the National is winning. No greater value is offered you—in fact you must pay $5000 or more to get the National quality and service in any other than the

National Improved Series V
Five Models $2750 to $3400

Write at once

National MOTOR VEHICLE CO.

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Compare these features with the very highest priced 1913 cars and you realize why we claim to offer you the greatest value on the market today

Long Stroke (4½ x 6), flexible and noiseless Motor, with enclosed valves.
Left Side drive.
Center control.
Gray & Davis Electric Starter.
Gray & Davis Dynamo Electric Lighting System.
Bosch double dual Magneto.
Multiple jet Carbureter.
12-inch Turkish Upholstery.
Full heavy nickel Trimmings.
Electric Horn.
Adequate baggage carrying Compartment concealed in body but easily accessible.
Powerful and reliable Brakes.
Spacious interior.
Tire Pump, integral part of the motor.
128-inch wheel base.
Adjustable ventilating and rain vision Wind Shield.
Hoffecker Speedometer.
Tire Carrier in rear.
Silk mohair Top, Cover and Curtains.
Full floating Rear Axle.
Resilient springs; ¾ elliptic in rear; semi-elliptic in front.
Large gasoline pressure-feed Tank with Gauge in rear.
Robe rail, foot rest, and foot mat in running board.
Plain, continuous, enclosed Metal Guards.
Easy riding qualities, unexcelled.
Oiling System, demonstrated to be perfect.

National Motor Vehicle Co.,
Indianapolis, Ind.
Please send me your advance catalog.
Name .....
Address .....

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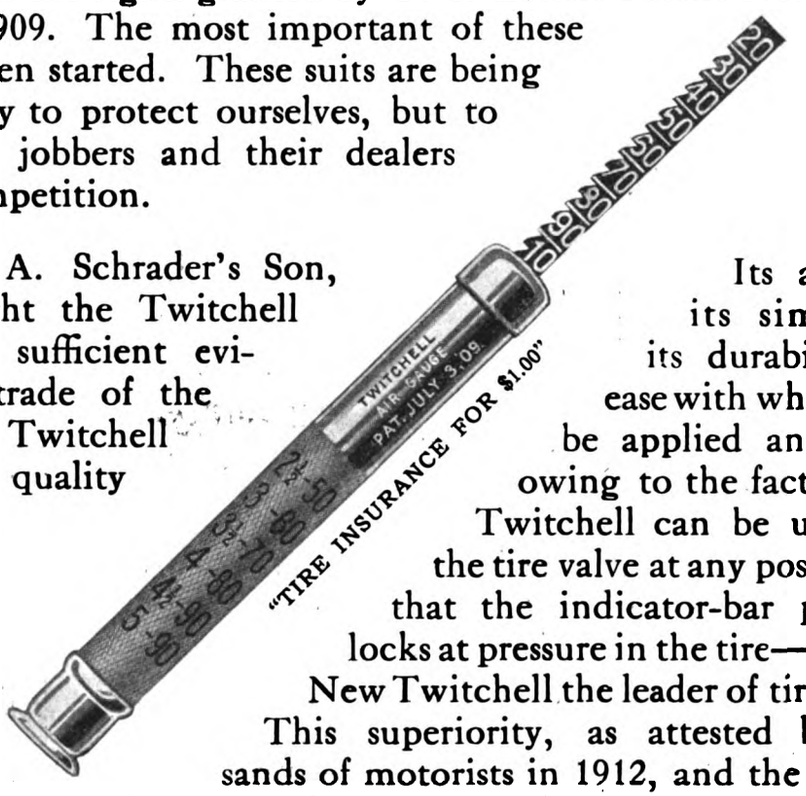
The Twitchell Gauge Company

is now owned and controlled by

A. Schrader's Son, Inc.

of New York City

THE TWITCHELL GAUGE CO. owns and controls the basic patents on all pencil type gauges and will vigorously prosecute all infringements on the rights granted by U. S. Letters Patent No. 927,298, issued July 6, 1909. The most important of these cases has just been started. These suits are being pushed not only to protect ourselves, but to protect all our jobbers and their dealers from illegal competition.



The fact that A. Schrader's Son, Inc., has bought the Twitchell Gauge Co., is sufficient evidence to the trade of the value of the Twitchell patents and the quality of the guage.

Its accuracy, its simplicity, its durability, the ease with which it can be applied and read—owing to the fact that the Twitchell can be used with the tire valve at any position and that the indicator-bar positively locks at pressure in the tire—make the New Twitchell the leader of tire gauges. This superiority, as attested by thousands of motorists in 1912, and the necessity for a tire gauge will be impressed on every car owner in the country by our advertising campaign. This advertising will bring car owners to you asking for the Twitchell. Be prepared to meet this demand.

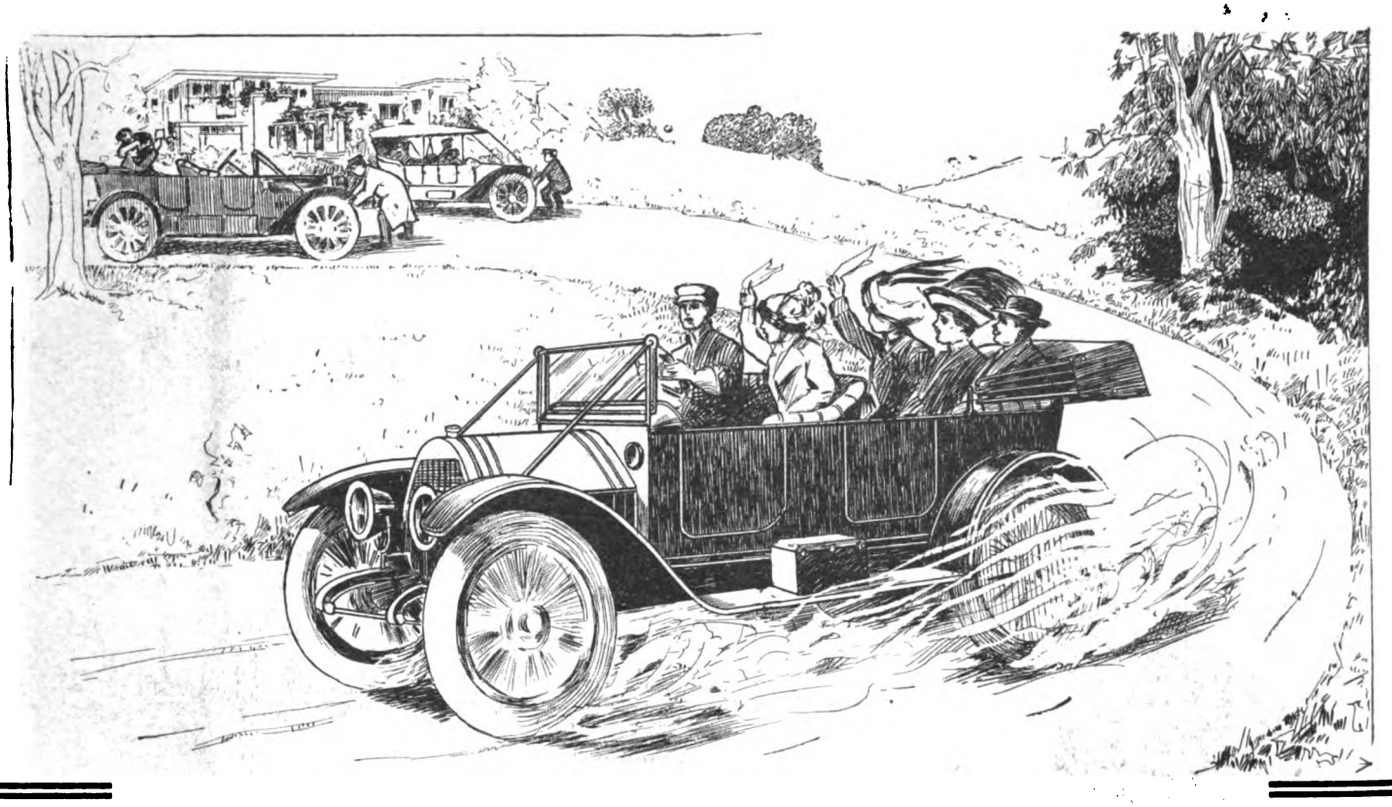
THE TWITCHELL GAUGE COMPANY

1202 Michigan Avenue **MAX D. BENDEL, Manager** **Chicago, Illinois**

Only Company Licensed to Manufacture Twitchell Gauges by

A. Schrader's Son, Inc.

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Quick Starts Win Many Races

Show me a red-blooded man in whose heart exists no desire to beat out his friends.

Leaving the Country Club, the man with the Electric Self-Cranker gets away first, while the other fellows are getting dirty and wasting time turning a crank.

Nor does he have to stop and "light up"—just push a button and all lights are on—pushes another and is off—ahead of the bunch and out of their dust.

Good, efficient Electric Lighting and Cranking Systems are economical, safe, convenient and always ready.

The best, in fact 90% of all makers operate them from the GLBA Battery.

When you buy, remember there are good reasons why your equipment should contain an

GLBA

Storage Battery

Use Class A GLBA Battery with an Electric Lighting Generator
Use Class B GLBA Battery with an Electric Self-Starter

Write us for full information

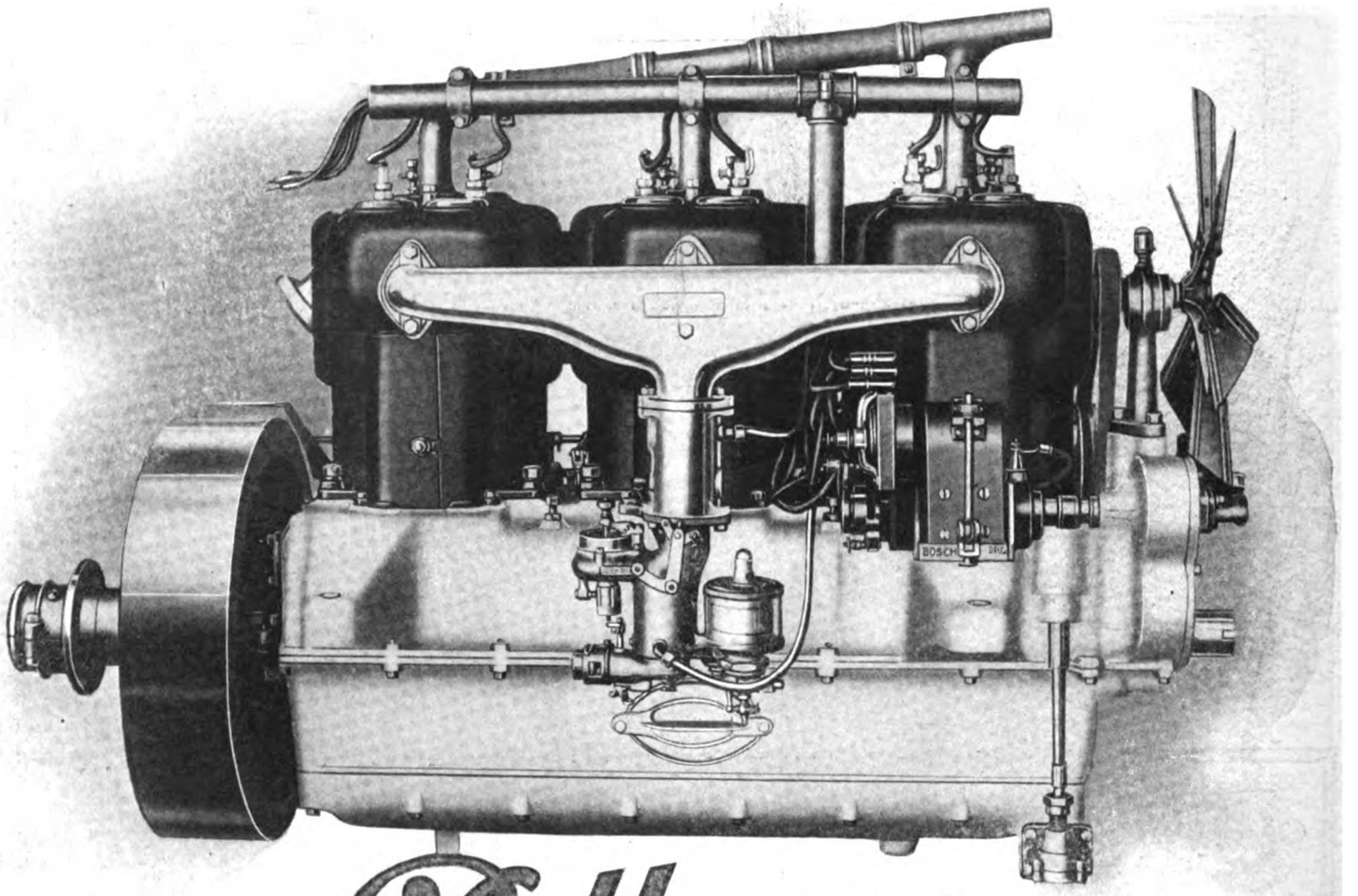
Willard Storage Battery Company

CLEVELAND, OHIO

New York Branch—136 West 52nd Street Detroit Branch—1191 Woodward Avenue Chicago Branch—2241 Michigan Avenue
San Francisco Branch—243 Monadnock Building

Depots in All Principal Cities in the United States, Canada and Mexico

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1913 Pullman 1913

Intake Side of the 6-66 Motor

It's no task to work up enthusiasm in selling the Pullman product—because Pullman dealers know that every piece of material is the finest that money can buy and that every single operation is as thorough and complete as the most skilled workmanship can make it.

All cylinders in Pullman motors are cast in pairs. This method of casting makes them the easiest to handle and produces the most perfect castings. There is ample water space, especially around the valve seats. By properly jacketing the motor at this point a considerable amount of valve warping is prevented. All cylinders are ground on Heald grinders to the most accurate measurements employed by any factory in the automobile industry. The maximum variation allowed on the size of the bore is one-half of one-thousandth of one inch while the absolute maximum variation on the out-of-round is one-quarter of one-thousandth of an inch.

And the care employed in the production of the motor is only characteristic of that done upon every part of a Pullman car. The result is a car not only up to the minute in design and construction but a car famous among its dealers for the repeat orders that it bring .

PULLMAN MOTOR CAR COMPANY, York, Pa.

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THE present demand for self-starting and lighting equipment has created a demand for an ignition system capable of producing a hot, dynamic spark independent of the engine speed.

This demand is being successfully met by

The Atwater Kent Ignition System

the starting button of which produces, not a few weak sparks, but a single heavy flame-like spark, thus insuring at all times the perfect ignition of any mixture that will burn.

Other salient features of the Atwater Kent System are the extreme simplicity of mechanism, only three moving parts, one contact, one adjustment and one non-vibrating coil.

While the Atwater Kent System is high in value and reputation, it is not high in price. In fact, it will cost less





than half as much as a good magneto and will give superior results at a much less cost of upkeep.

We can now furnish two types of the Atwater Kent System for use on cars as sole ignition in place of the magneto, in conjunction with lighting and starting equipment.

***Type "F"* without Automatic Spark Control.**

***Type "K"* with Automatic Spark Control and insulated primary circuit.**

No matter what the requirements, the Atwater Kent System of Ignition affords ideal ignition.

Write today for detailed information and illustrated booklet "D."

ATWATER KENT MFG. WORKS

4930 Stenton Ave. Philadelphia, Pa.

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Are you watching the growth in motorcycling?

Many manufacturers of automobile accessories can find a profitable field for extending their business by adapting some of their specialties to the requirements of the motorcyclists

Over 80,000 motorcycles will be built in 1913

and all these motorcycles will require tires, magnetos, carburetors, spark plugs, bearings, lamps, batteries, horns, chains, motors, oils, speedometers, rims, gears and forged and manufactured parts of all kinds

You can reach this growing field

by advertising in

THE BICYCLING WORLD (FOUNDED 1879) and MOTORCYCLE REVIEW

The oldest cycling journal published and the recognized authority on motorcycling and all allied subjects

SAMPLE COPY AND ADVERTISING RATES GLADLY SENT ON REQUEST

Bicycling World and Motorcycle Review

Mecca Building, 1600 Broadway - - New York City

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Prest-O-Starter

Starts your engine (old or new) quickly and easily in coldest weather

For Four Cylinders $20

For Six Cylinders $25

$1.50 extra for two-way valve necessary when the same tank is used for both starting and lighting.

Here's a starter that adds practically no weight to your car, is perfectly simple and is as durable as the engine itself. Easily applied to any engine, old or new, very economical in the use of gas, and requires no expert repairing.

How Prest-O-Starter Works

The principle of starting a motor with Prest-O-Starter is the same as "starting on compression." A measure of acetylene, at low pressure, is pumped from your Prest-O-Lite Tank into the cylinders.

Touch your spark—your engine starts.

Unlike "gasoline priming," it is not affected by heat or cold. It is certain.

In cool weather, by opening a valve on the dash, you can feed gas at low pressure into the intake manifold. This allows your engine to run on acetylene until it is warm enough to run on gasoline.

If the Prest-O-Starter did no more than prime your engine in this way during cold weather, this convenience would be well worth the price.

But Prest-O-Starter is more than a primer. When installed properly, it will start your engine, summer or winter, almost invariably without recourse to the crank.

Make Sure Your Starter Is Installed Correctly. Look It Over

The Prest-O-Starter is easy to install correctly. In fact, it's so very easy to install that some good factories and garages install it with utter carelessness, overlooking the one or two simple features vital to success in operation. Fortunately this is an easy matter for the car owner to correct, even if he isn't a mechanic.

Our literature tells you exactly how the Prest-O-Starter is installed, and how to adjust it. Anyone can give it the slight attention it may need or quickly tell a dealer where the trouble lies.

Every Prest-O-Starter is sold with the assurance of satisfactory service. The entire Prest-O-Lite Organization is back of every one. If you have any trouble, report it to us or to our nearest branch. We'll wipe it out quickly.

Insist Upon GETTING the Outfit COMPLETE

During warm weather the connection which feeds acetylene into the intake manifold is not needed. So some dealers are not installing it. But in cold weather this feature is vital. You're entitled to it. It's included in the price, so see that you get it.

Now More Than Ever You Need One

Your Prest-O-Starter, properly installed, will average better than 95 starts out of 100 attempts. The few failures are caused by your motor stopping on dead center, or cylinders filled with burnt gas. Both of these conditions can be easily avoided when stopping your motor. But should either or both happen, an eighth or quarter turn of the crank, with the switch at neutral, will remedy the trouble at once, with all of the danger and labor of cranking eliminated.

Rest assured that no other starter can give you as high efficiency with as great economy, durability and freedom from mechanical trouble. The price is within easy reach.

Get in touch with any of our branches—or your dealer—or write us for descriptive literature.



The Prest-O-Lite Co. 287 E. South St. Indianapolis, Ind.

BRANCHES :

Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Memphis, Tenn.; Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Portland, Ore.; Providence, St. Louis, St. Paul, Minn.; San Antonio, San Francisco, Seattle, Syracuse, Merritton, Ont.; Toronto, Ont.; Winnipeg, Manitoba

Exchange Agencies Everywhere

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ONE LOOK locates the trouble

Lift the hood and look. A single glance, bright day or darkest night, tells the whole story of what's wrong with your ignition when your motor is equipped with *J-D* Visible Gap Spark Plugs. Hunting around with matches, short circuiting with a screw driver, unscrewing the plugs to examine the points—all that fuss and loss of time are needless.

J-D Visible Gap Spark Plugs

See how simple the secret of their efficiency is. In the porcelain—outside the motor—is an opening or port. In the portion of the central electrode and facing this port is an adjustable gap, regulated by knurled nut at the cap so that it can be widened or closed entirely. Through this port you see if the spark is jumping the gap in the electrode. If there is no spark at the gap you know the trouble lies behind in wiring, magneto, coil or batteries. If the spark jumps, but proper ignition fails to follow, then the points must be fouled or carburetion is faulty. By widening the gap you can increase intensity of spark and scour the points clean through the J-D patented electrical action found in no other plug.

There are other services this plug can render. It facilitates timing of engine, regulates spark for any cylinder and uses minimum current.

Yet the Price Is Only $1.00

If your dealer cannot supply you, we will mail as many as you want prepaid on receipt of price. Our guarantee, "Your money back or a new plug unless you are absolutely satisfied," goes with every plug.
A new edition of our classic "Ignition and Spark Plug Talk" is just off the press. Write for a free copy.

WHEN ORDERING BY MAIL, BE SURE TO GIVE THE SIZE WANTED OR MAKE OF MOTOR.

Jeffery-Dewitt Company

565 Butler Avenue **Detroit, Michigan**

Largest Manufacturers of Spark Plugs in the World

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"The Horn that's Made for the Discriminating"

TUTO HORN

THE TWO TONE HORN

Tuto, The Standard of the Future.

THE dual service of the TUTO horn is making thousands of friends for it and the purchasing public are specifying this type of warning signal in preference to all others.

¶ The TUTO'S rapid increase in popularity has been made solely through its service-giving qualities, its positive, instant action, effectiveness of both signals, the low and the loud, and the entire absence of confusing or objectionable notes.

¶ The makers of the TUTO horn were first to produce a practical dual service signal with a low note for ordinary use and a loud note for emergency purposes. Furthermore, the TUTO horn was the first warning device to provide this double service through the manipulation of a single push button, so arranged that the natural increase in pressure, incident to approaching danger, would positively sound the loud note.

¶ All of these novel features of the TUTO horn are covered by issued patents and pending applications so that this efficient dual warning signal can be obtained only in the TUTO and TUTO-ETTE horns as made by the Dean Electric Company.

¶ Car makers have been quick to appreciate the advantages of the TUTO horn, and many thousand horns are used as standard or special equipment on the leading cars of this country.

¶ We are the largest makers of electrical warning signals in the world, our orders for two months alone, amounting to 55,000 horns for standard equipment on 1913 cars.

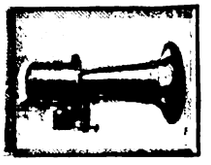


TUTO Horn, $25.00

The Dean Electric Co.

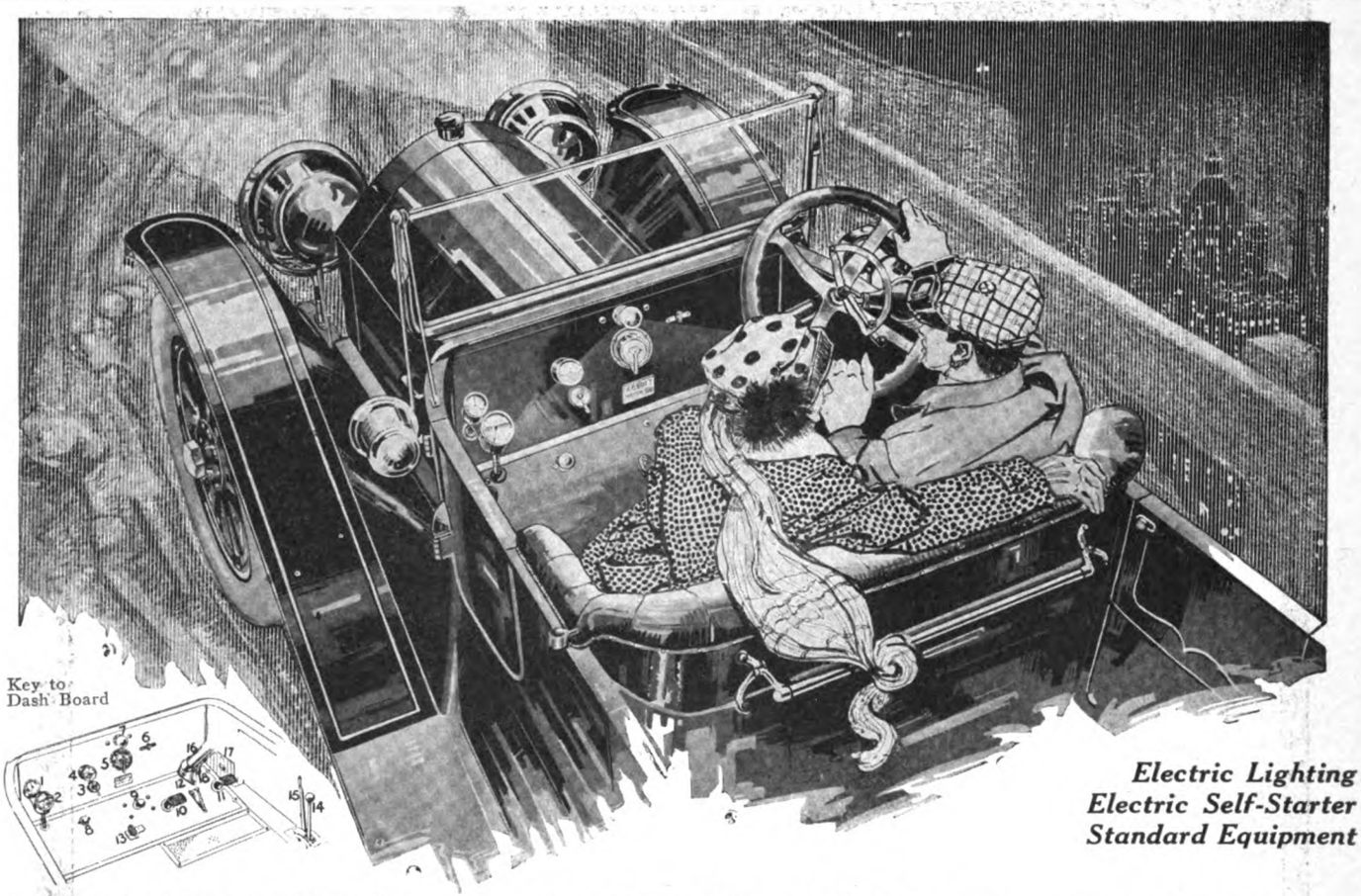
260 Taylor Avenue, Elyria, Ohio

"Look for Dean where Quality's seen"



TUTO-ETTE $17.50

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Electric Lighting
Electric Self-Starter
Standard Equipment

1, *Clock*; 2, *Speedometer*; 3, *Carburetor Adjustment*; 4, *Ammeter*; 5, *Ignition Switch*; 6, *Lighting Switch*; 7, *Dash Light*; 8, *Carburetor "Flooder"*; 9, *Self-Starter Button*; 10, *Clutch Pedal*; 11, *Brake Pedal*; 12, *Accelerator*; 13, *Muffler Cutout*; 14, *Control Lever*; 15, *Brake Lever*; 16, *Steering Column*; 17, *Dash Ventilator*; 18, *Horn*.

The One Thing That Will Attract Your Attention First, on Each of the 1913 Abbott-Detroit Models is the Beautiful Body, With Its Artistic Lines and Superfine Finish.

In Touring Cars and Runabouts alike, the body lines are long and flowing; the fenders broad and sweeping; the doors wide and well mounted, flush with the side of the body.

The seats, deep and spacious, are upholstered with 12-in. cushions made of an excellent grade of curled hair and leather, backed up by oil tempered spiral springs. There is ample room for the full complement of passengers to ride in comfort.

Another Thing

The great ease of riding which every one notices when, for the first time they ride in an Abbott-Detroit, is due to our three-quarter elliptic, underslung spring construction.

Unlike other cars, the Abbott-Detroit springs are hung under the axles instead of being mounted over them.

The result is that the whole car is lower, the center of gravity thus being brought nearer the ground—the car is rendered safer to drive at high speeds and the comfort of the occupants is very materially increased.

The New Self-Starter

The Abbott-Detroit cars are equipped with our own design of electric self-starter, not a combination of ignition, lighting and starting devices such as some manufacturers employ, but a real dependable self-starter built as a part of the engine, connected to the crankshaft with an independent train of gears through an over-running roller clutch.

When the gasoline motor starts, this clutch releases the gears and they remain idle while the gasoline motor is running.

Electric Lighting

The current for the electric lighting system is supplied by a dynamo operated by the engine, which, in addition to supplying sufficient current to light all the lamps brilliantly, keeps a storage battery, from which current is drawn while the motor is standing still, always charged to its full capacity.

Other Important Features Are

Carburetor dash adjustment, by means of which the gasoline mixture may be changed to suit conditions—a carburetor priming device—a clock speedometer set—black enameled and nickel trimmed electric head lights, side and tail lamps—demountable rims—extra large artillery wheels—over-sized tires—Continental motors with enclosed valves—Timken Roller and imported Schafer Annular Bearings—oil tempered springs—nickel steel transmission—double trussed nickel steel, full floating type of rear axle—heavy duty forgings, double heat treated—dry plate multiple disc clutch.

"The demand of the day is that an ***organization*** *shall be judged by its product, and not by* ***what*** *it claims for itself." Keep this in mind* ***when you*** *examine these* 1913 *models.*

MODELS AND PRICES.

30-40	Fore-Door Roadster, 116-inch wheel base	$1700
34-40	5-passenger, Fore-Door Touring Car, 116-inch wheel base	$1700
44-50	5-passenger, Fore-Door Demi Tonneau, 121-inch wheel base	$1975
44-50	7-passenger, Fore-Door Touring Car, 121-inch wheel base	$2000
44-50	Battleship Roadster, 121-inch wheel base	$2150
44-50	7-passenger, Fore-Door Limousine, 121-inch wheel base	$3050

Advance Catalog on Request.

Abbott-Detroit

Built for Permanence and Guaranteed for Life

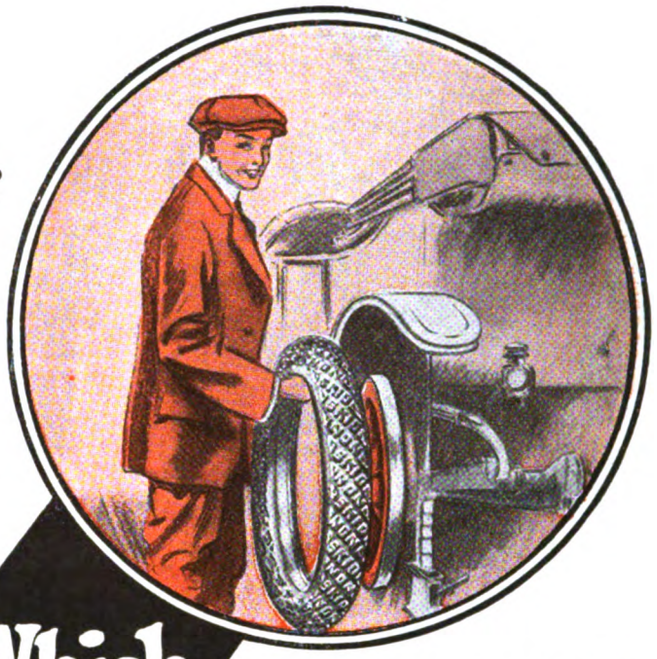
ABBOTT MOTOR COMPANY
607 Waterloo St., Detroit, Mich.

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The Days of Tire Trouble Are Over for the Knowing Car Owner Who Will Have Nothing But

Firestone

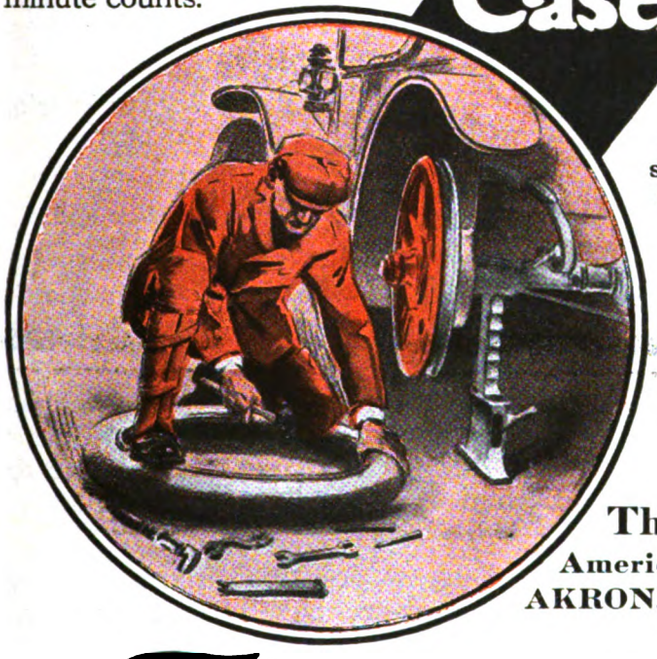
Quick-Detachable Demountable Rims



You need never fear delay in an emergency if you are secured by these time-saving rims. Four or five minutes at the most is needed to change tires.

Figure the worth of this when catching a train, when every minute counts.

Which is your Case?



Their simple, practical design permits of the exchange of rims with no special tool beyond an ordinary wrench. In case of repeated punctures the tire may be exchanged whether rim is on or off the wheel.

Tires Cannot Be Thrown. When puncture or blow-out occurs, the Firestone rim holds tire securely in place. The valve-sleeve, by preventing valve from slipping out of place, holds metal plate inside tube in regular position. Will not let clincher side ring slip. It is a refinement which means much in safety to every user.

There's Economy as Well. Firestone Rims are made with non-split base. Moisture, dirt and other foreign matter cannot get at the tire to decay and ruin casing or inner tube.

Firestone Rims remove the last "fly in the ointment" of perfect motoring pleasure. Equip your old car with them, and demand them for your new one.

Write for Rim Book

The Firestone Tire & Rubber Co.

America's Largest Exclusive Tire and Rim Makers

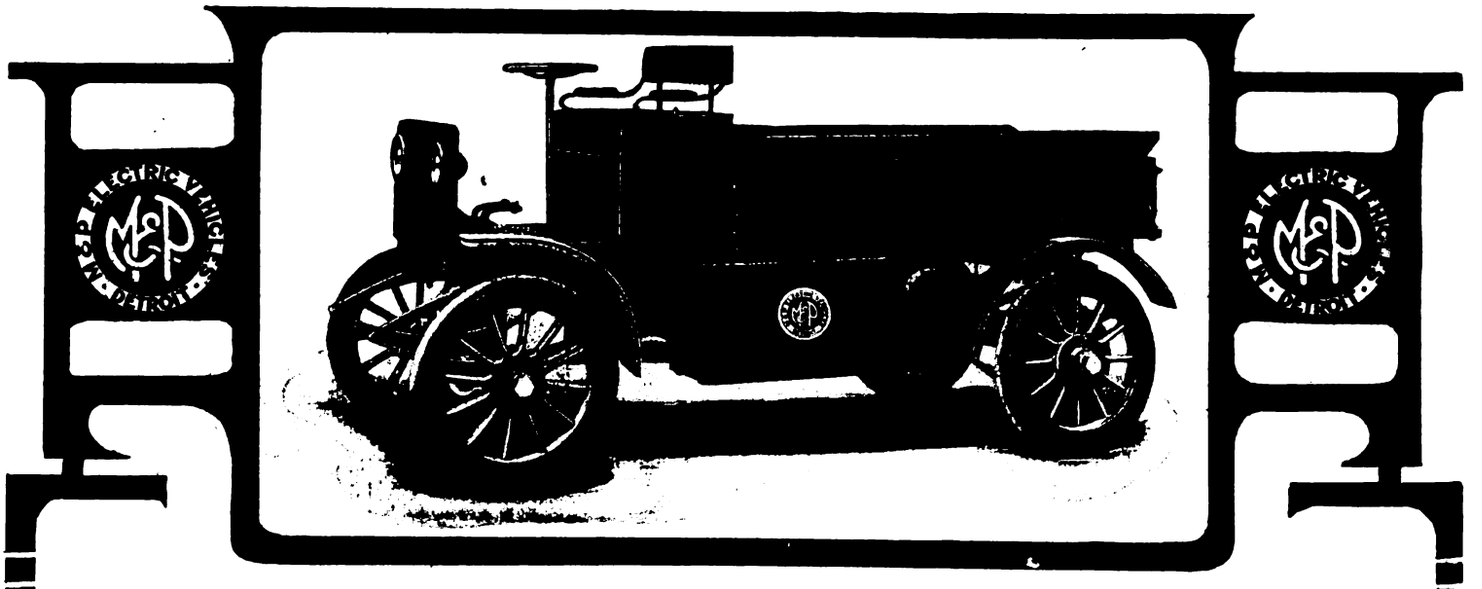
AKRON, OHIO :: All Principal Cities

Firestone

Quick-Detachable Demountable Rims

For Any Type of Tire—Clincher or Straight Side

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The M & P One Thousand Pound Electric Truck Comes to Your Customer, Mr. Dealer, With an Iron-Clad Guarantee Back of It.

This guarantee covers every possible angle, protecting you and the buyer in the matters of reliability and economy of operation.

The M & P One Thousand Pound Electric Truck is the first electric truck of its quality to be sold at M & P Prices. And because of long experience, and low overhead we are producing a vehicle which will positively give more or better service at lower cost of operation than can any other electric truck selling for as high as $2,200.

Comparison with the gasoline truck is unnecessary. We are selling electric trucks whose advantages are obvious.

A Truck That Makes Good at a Price That Sells It

The M & P Truck is the acme of simplicity—strong, sturdy, reliable and economical. In a word, it is properly designed and properly built. It is "Made to make good and it does." Tests prove that the cost of operation is twenty-five to thirty-three per cent less than that of a similar powered gasoline car.

A point that will also appeal to your trade is the price. It puts the high grade electric delivery wagon within the reach of the average retail merchant, who is, at present, utilizing horse-drawn vehicles for transportation purposes. We have the facts and data to prove to you and to such a merchant that the "M & P" can save him a surprisingly large aomunt of money.

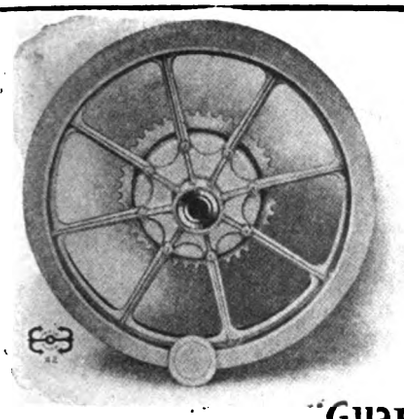
You, Mr. Dealer, have studied the electric commercial proposition—you know that the trade is hungry for it. You don't have to go to the big manufacturer to sell this truck. You have but to present it to the dry goods merchant, the hardware man, or any other merchant with a delivery problem, to prove there is a waiting market.

Get the facts and figures covering this proposition, including complete description of the M & P and our liberal commission to you. Find out how and why it will pay you to get busy now.

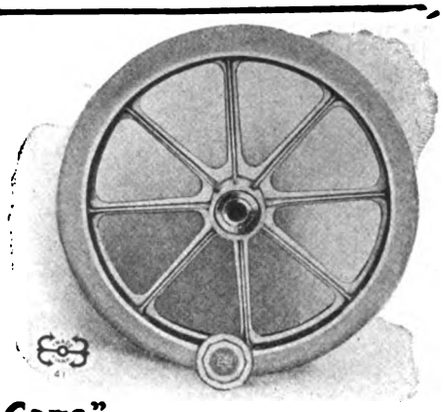
M & P ELECTRIC VEHICLE COMPANY

Franklin and Dubois Streets **Detroit, Michigan**

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SHELDON STEEL WHEEL



"Guaranteed to Outlast a Score of Cars"

SHELDON Steel Wheels Lighter Than Wood

These wheels are one piece construction. The hub is bored to receive the bearings, of which you have several options. The rim is turned to size, saving the cost of S. A. E. Bands, which are unnecessary. There are no flange bolts to come loose—a defect in wood wheels often causing much trouble and annoyance.

The economic disposition of material makes SHELDON STEEL WHEELS counteract tremendous side pressures. Lighter than wood, SHELDON STEEL WHEELS permit quick acceleration, which means fuel economy. Light weight and the rapid heat radiating capacity of steel increases the life of tires 100 per cent. Does this saving increase the value of your car?

SHELDON STEEL WHEELS make a quality truck still better and build a reputation for such a truck that is bound to make more and more business for its manufacturer. Comparative cost considered, the difference will come back in tenfold measure.

This company is now prepared to make delivery of steel wheels for one ton trucks, other sizes to follow. This should appeal to truck manufacturers who have been subject to annoying delays incident to receipt of wood wheels. Were the steel product no more valuable from an engineering standpoint than the wooden wheels this one item of convenience should appeal. Get your axles and wheels from one source, save trouble and freight.

Manufacturers, engineers, and others can get additional information that is bound to turn them into customers.

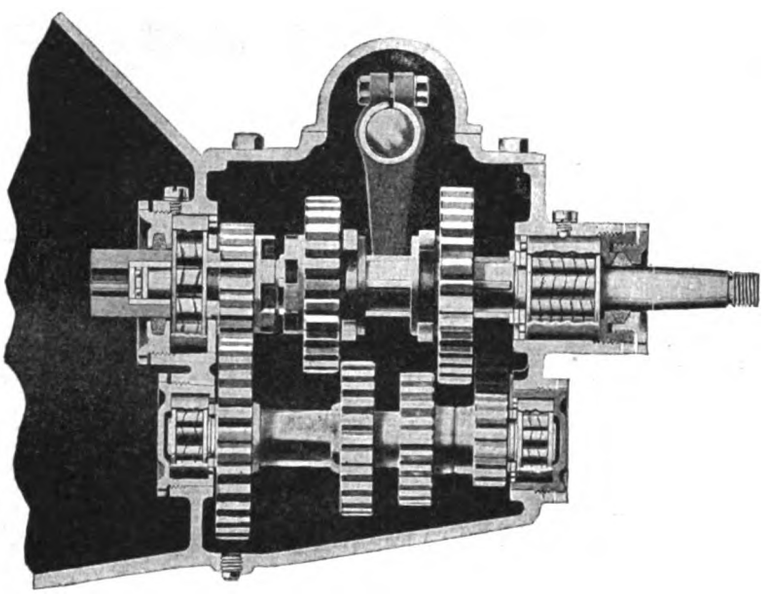
SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

Detroit Branch:
1215 Woodward Avenue

Chicago Branch:
68 East 12th Street

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Hyatt Quiet Bearings



QUIET BEARINGS are essential to present day axles and transmissions. Noise must be eliminated.

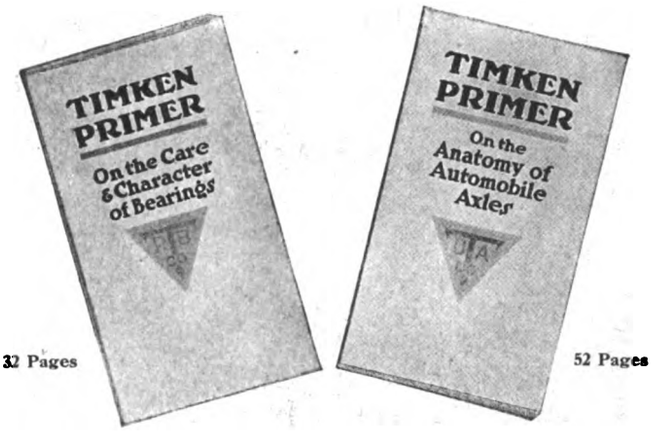
Sound is produced by the vibratory motion of any solid substance. Sudden shocks or jars produce vibrations. Rigid bearings transmit and intensify them.

The flexibility of the Hyatt Roller cushions shocks—absorbs vibrations—hence reduces noise. An actual test will demonstrate these facts conclusively.

Sixty-five thousand transmissions are equipped with Hyatt Quiet Bearings this season.

HYATT ROLLER BEARING CO.
DETROIT, MICHIGAN

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32 Pages 52 Pages

Understand Your Motor Car!

¶ These two free booklets will give you a clear conception of the importance and the construction of axles and bearings—the foundations on which the whole car rests.

¶ They are yours for the asking—sent free, postpaid, on request to either Timken Company. Write for the

Free Timken Primers *Free*

ON BEARINGS ON AXLES

¶ Called Primers because written in plain non-technical language that anyone can understand. One car owner writes: "The Timken Primers are certainly a boon to the owner of an automobile; they are extremely interesting and contain a wealth of information."

Here are some of the Subjects covered in the Timken Primer on Bearings

¶ Importance of the bearings.

¶ The many different things that the bearings must do.

¶ Where to find the anti-friction bearings in a motor car.

¶ A B C of Timken Tapered Roller Bearings.

¶ How the Timken Bearing works. How it is made.

¶ A very important comparison of the principles of various types of ball and roller bearings.

¶ Care of bearings—lubrication and adjustment.

In a simple, human-interest way Timken Primer on Axles tells:

¶ How life and safety depend on the axles.

¶ How the rear axle performs four distinct functions and is composed of several hundred separate pieces requiring thousands of operations to make.

¶ It tells how to lubricate, adjust and care for the axles.

¶ In separate chapters it takes up the front axle, the rear axle and axles for commercial cars. It explains full-floating, torque, action of the differential, of the brakes and many other things.

¶ The Timken Primers don't try to sell you anything. Timken Axles and Bearings are sold only to motor car manufacturers to be incorporated as integral parts of their cars. The Primers will give you just the information you need to properly appreciate and understand the fundamentals of your motor-car. They are free. Send for them today.

The Timken-Detroit Axle Company
Detroit, Michigan, U. S. A.

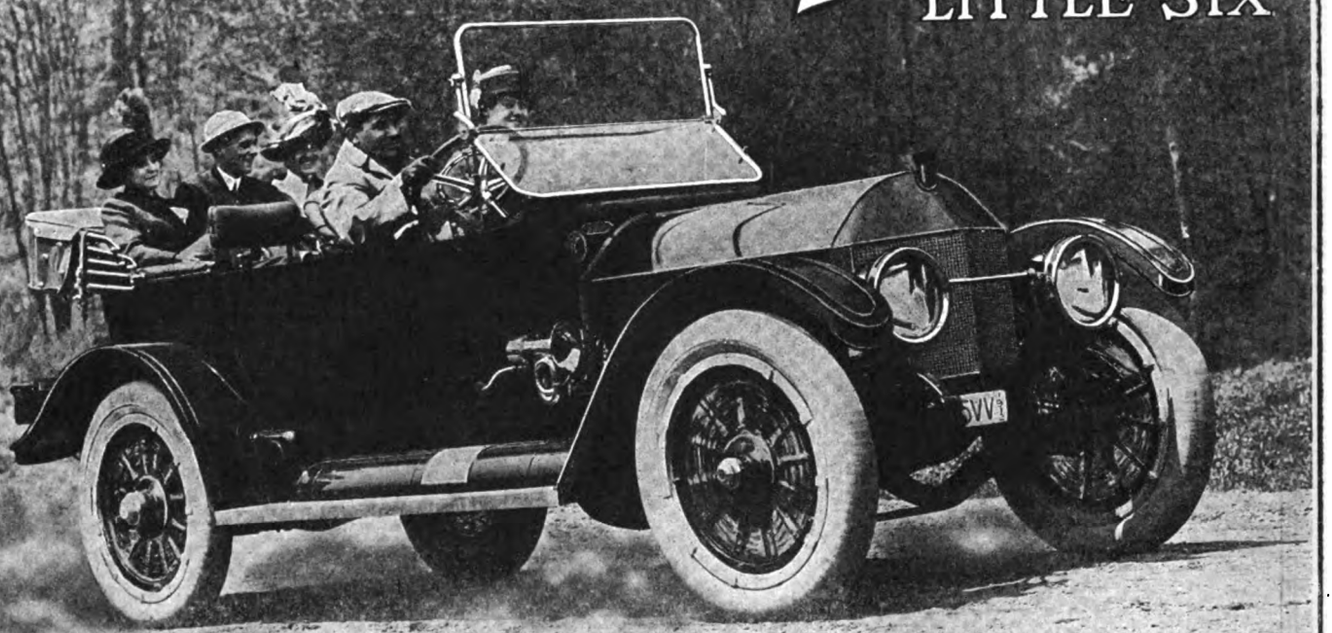
The Timken Roller Bearing Company
Canton, Ohio, U. S. A.

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WHY DO THEY SMILE?

IT'S A Knox "LITTLE-SIX"



"IF YOU HAVE NEVER DRIVEN ONE UP A HILL YOU HAVE MISSED HALF THE SPORT OF MOTORING"

CATALOGUE MAILED ON REQUEST

KNOX AUTOMOBILE CO.

SPRINGFIELD, MASS.

NEW YORK BRANCHES CHICAGO

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DEALERS—Now Is the Time to Get More Business Through the Sale of Warm Hand Wheels. Winter Is Upon Us.

You can't get away from the fact that the Warm Hand Wheel is not a luxury but a necessity in large demand among those who drive for pleasure and business in winter.

No progressive dealer can afford to overlook the importance of this accessory as a ready seller with a liberal commission back of every sale—at this time particularly, when six months' steady use is ahead—you ought to grasp the opportunity NOW.

The Warm Hand Wheel is operated through either storage battery or electric lighting system, using a negligible amount of current. It is particularly adapted to the Ford car, using the current from the "built in" magneto, without interfering with the ignition.

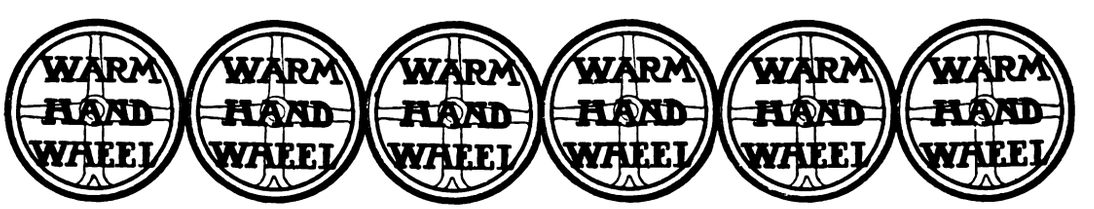
You, Mr. Dealer, should canvass your trade. Just find out how many car owners would appreciate a warm, delightfully comfortable steering wheel in all conditions of winter temperature—how many would do more driving in winter and so make more business for you. You will find the business waiting.

The Warm Hand Wheel is an economical consumer of current—can be installed in a few minutes—is always dependable and sells on sight.

The retail price is $15. Your commission is large and will warrant you in featuring the device. Now is the time to get your territory. Will you write for the proposition?

Warm Hand Steering Wheel Company

527 Fifth Avenue **NEW YORK CITY**



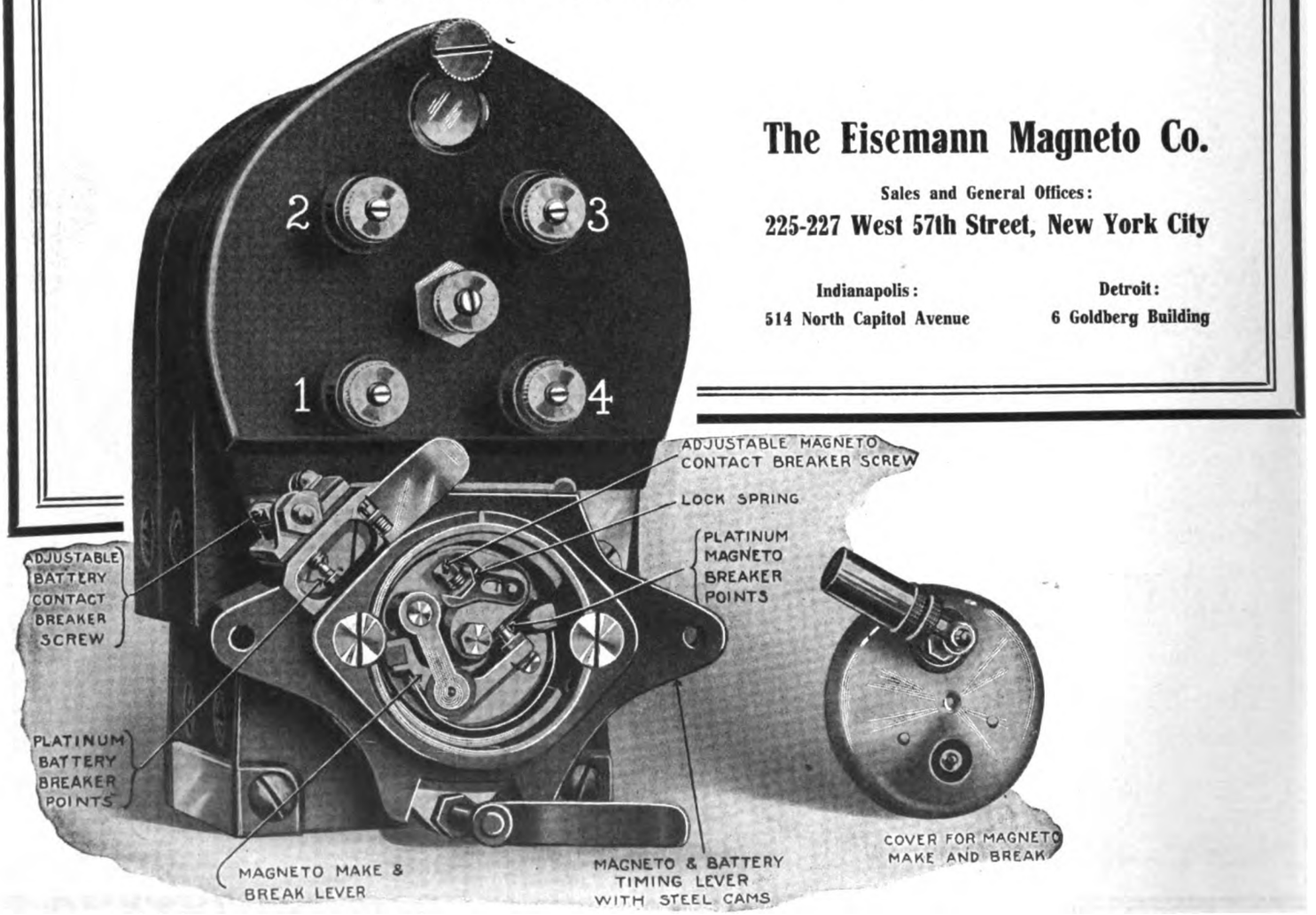
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EISEMANN

LOOK at this type E. M. direct high tension magneto closely, note first how simple is the construction work itself—and how readily accessible is every single part of the mechanism.

All vulnerable parts of each system are separate from the other—for instance, a separate contact breaker is used for both battery and magneto. On the other hand, to avoid unnecessary duplication, parts not subject to accident and wear are used in common.

The cams are large, round steel pins instead of the old-fashioned sloping steel pieces. These cams assure absolute accuracy in breaking the circuit every 180 degrees, and as the break occurs very quickly, the efficiency of the spark is correspondingly greatly increased. It is by this means, largely, that Eisemann Magnetos have become noted for the hot, fat spark they develop.



The Eisemann Magneto Co.

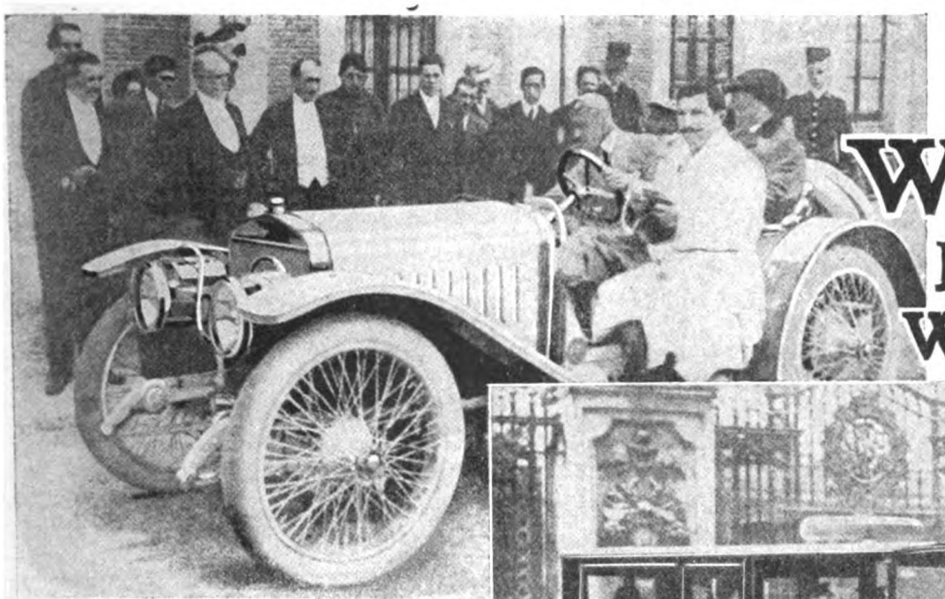
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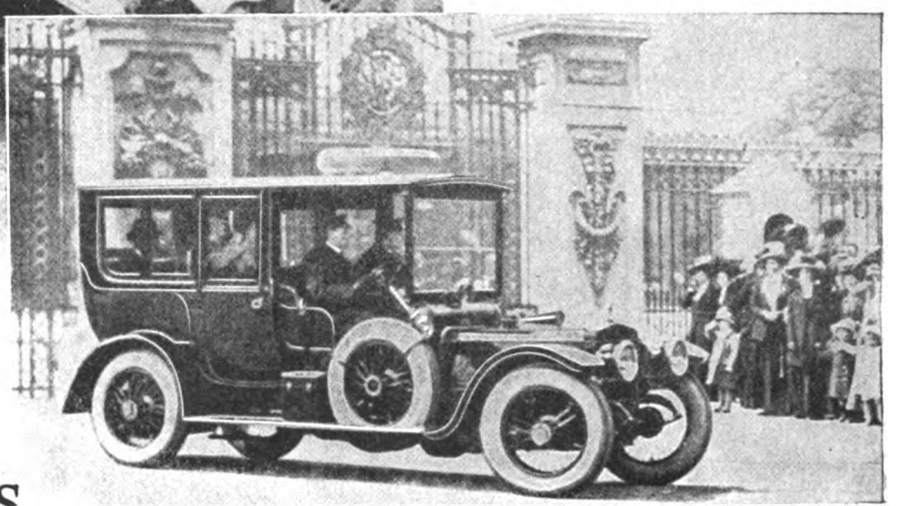
Detroit:
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H.M. The King of Spain
starting from San Sebastian.

Rudge-Whitworth Detachable Wire Wheels



H.M. King George in his Daimler Car, fitted with Rudge-Whitworth Detachable Wire Wheels, leaving Buckingham Palace.

FITTED WITH

Houk QUICK DETACHABLE **Rims**

Royalty demands the best regardless of price. The private cars of the Kings of England and Spain are equipped with *Rudge-Whitworth Detachable Wire Wheels.*

Their numerous points of suspension absorb all shocks and take up the heat produced by friction, so destructive to tires. Strong, convenient, tire saving, the RUDGE-WHITWORTH WHEEL has created a sensation in the European motoring world.

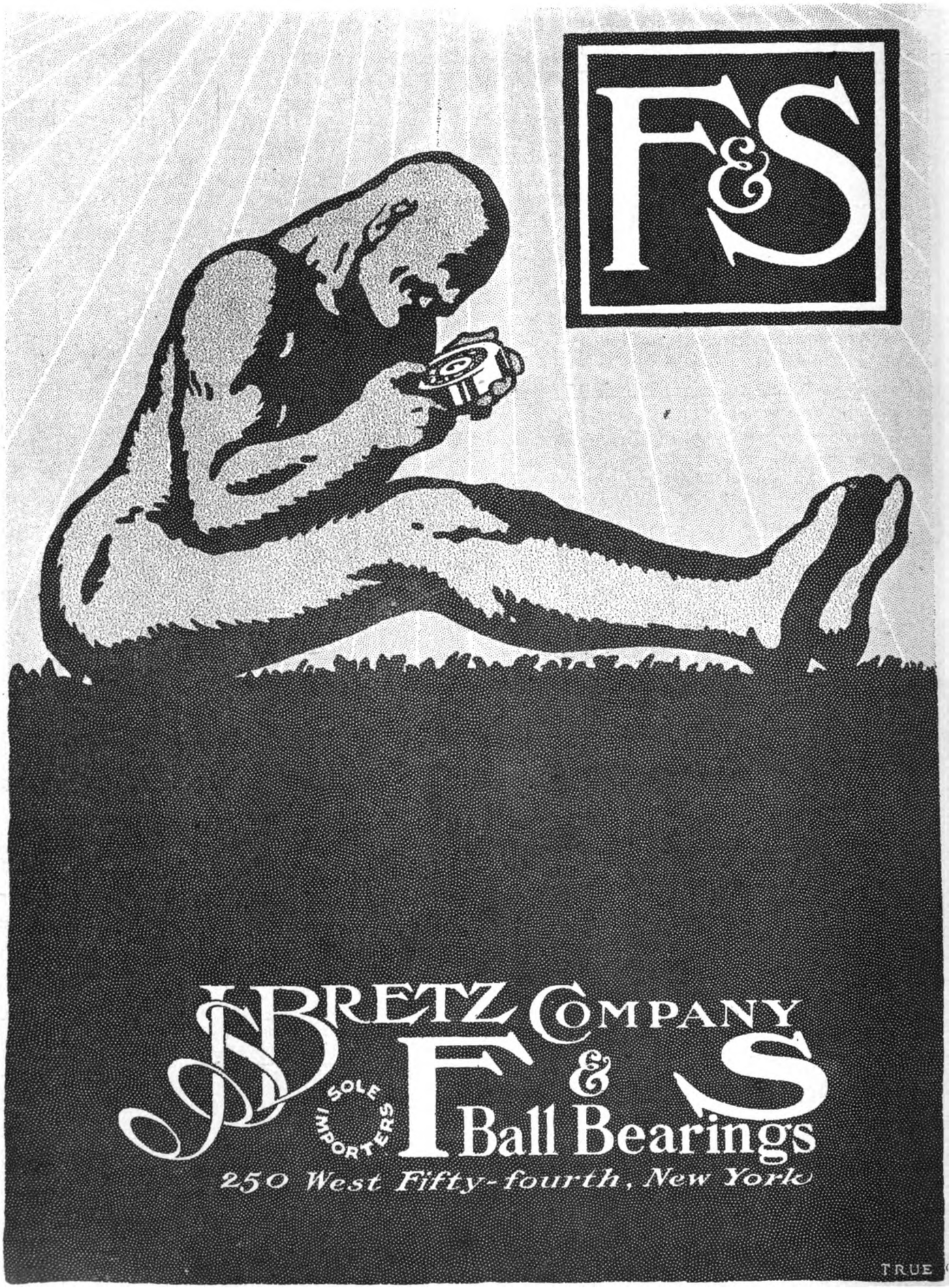
The Standard Roller Bearing Company, of Philadelphia, is now manufacturing the RUDGE-WHITWORTH WIRE WHEEL under *Rudge-Whitworth Patents*, and it will be equipped with the Houk Quick Demountable Rim for the American trade.

The RUDGEWHITWORTH WHEELS are practically indestructible and absolutely rustless.

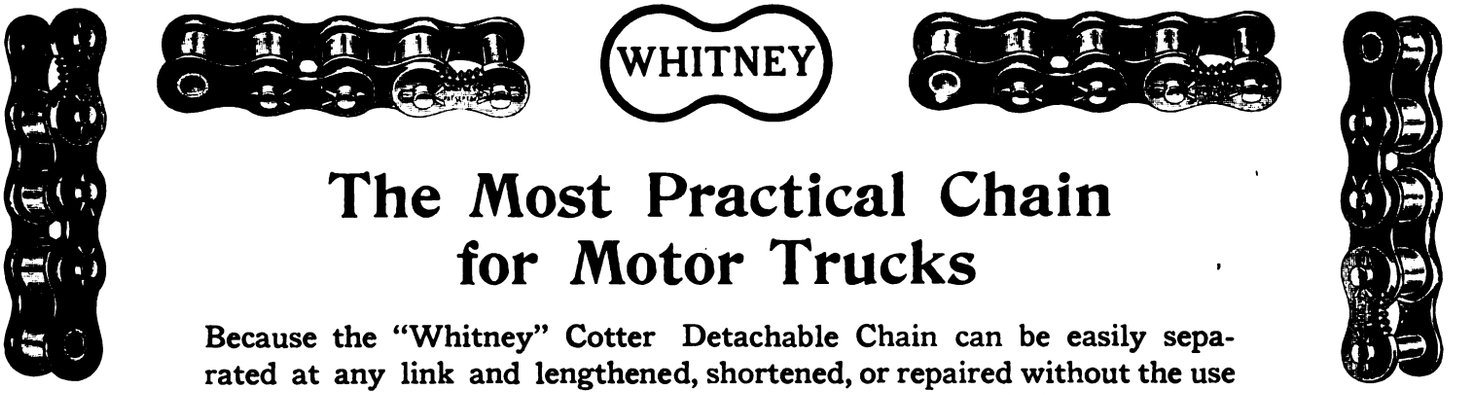
George W. Houk Company

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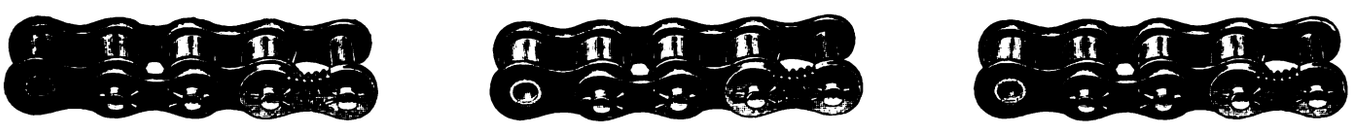
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Because the "Whitney" Cotter Detachable Chain can be easily separated at any link and lengthened, shortened, or repaired without the use of any special tool. This is of great advantage to truck builders, owners and drivers.

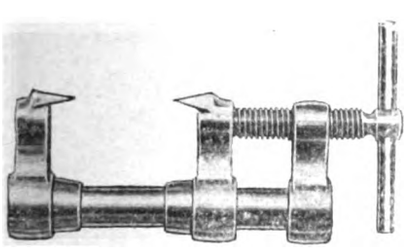
"Whitney" Chains are used by the leaders because they are strong, accurate, dependable and above all long lived. They are made right and they're made from the right kind of material, thus giving highest efficiency. When making replacements insist on a "Whitney."

"Whitney" Chains Are Built for Strains

THE WHITNEY MFG. CO., Hartford, Conn.



Make Your Car Ride Easier



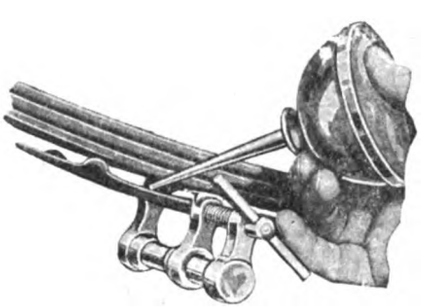
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Tires Inflated to the Right Pressure

He insists that this is tire economy and

Saves You Money

How do you know what pressure you have in your tires? A

SCHRADER
UNIVERSAL
Tire Pressure Gauge

(Trade Mark Registered in U. S. Patent Office)



(Patented March, 1898—Other Patents Pending)

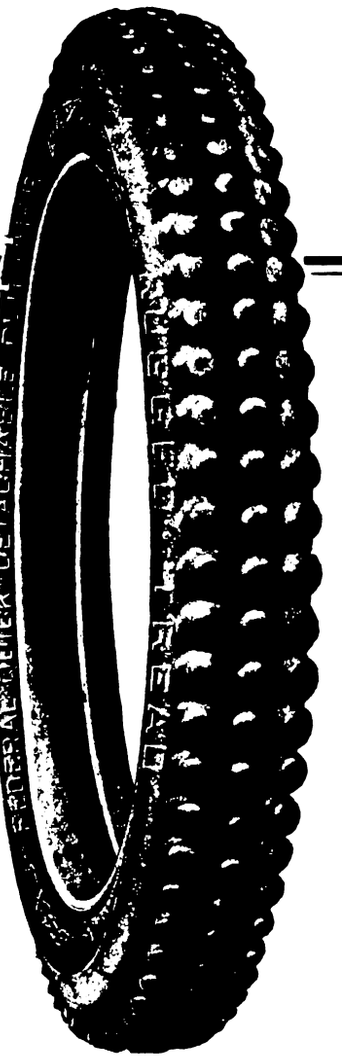
will tell the exact pressure in your tires at any time, day or night, by simply holding this Gauge to your Valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the Gauge can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the Indicating Sleeve can be pushed back into the Gauge with your finger. No catches or snaps to operate or get out of order. This Gauge is 2½ inches long over all, short enough to apply easily to the smallest diameter of wheel and can easily be carried in the vest pocket or the change pocket of your trousers.

Price $1.00 Each
Ready for Delivery Now

Guaranteed Simple and Absolutely Accurate

Can be obtained from all tire manufacturers and the dealers, or

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	List Price	Allowance	Net to You
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Allowance made for any make of Magneto.

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Anderson, Indiana

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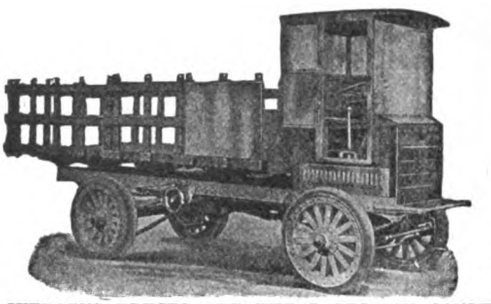
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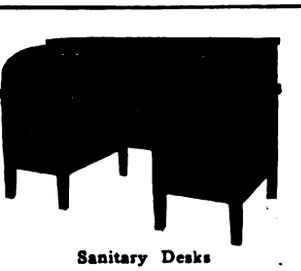
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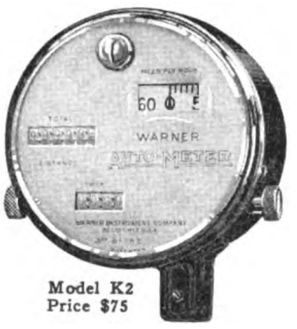
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Price $75

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Prices from $50 to $145. For sale by dealers all over the world and at our own branches.

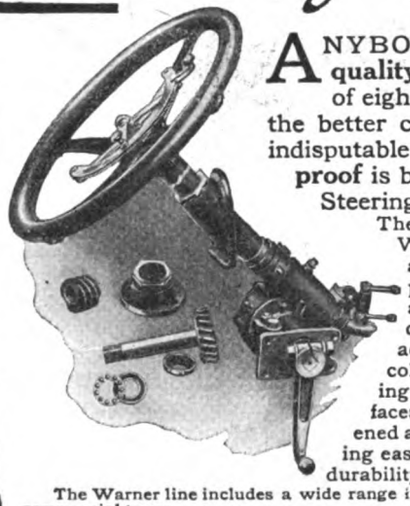
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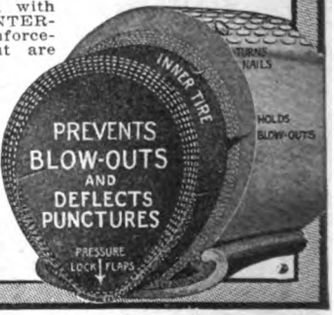
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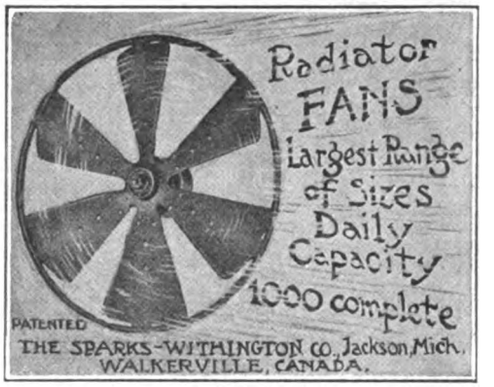
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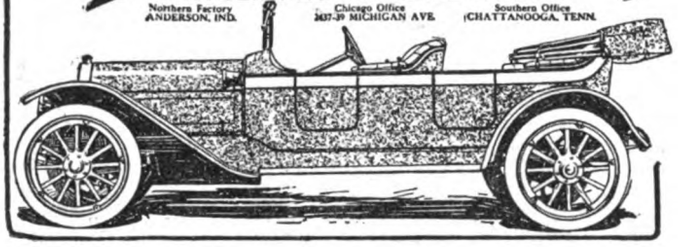
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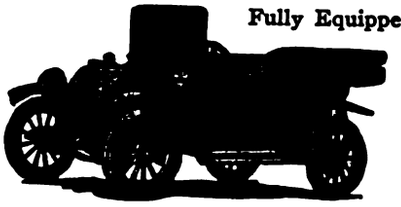
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The Detroiter—$850

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25 H. P. Long Stroke Motor

Enclosed Valves, Three Point Suspension, Unit Power Plant, Platform Rear Springs, Full Floating Axle, Left Hand Drive, Center Control, Drop Frame, Large Tires, Complete Ball Bearing Car. Write for specifications.

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Six Models 40 and 50 H. P. Fully Equipped

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Model 42—Roadster type—all with the splendid new en bloc motor, 4½ inch bore, 5½ inch stroke. 40 H.P..... **$2400**

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Stewart Delivery Trucks

Money-Savers
Time-Savers
Trade-Bringers

Sell Stewart Trucks in Winter Months

No let-up in business for the dealer who handles Stewart Delivery Trucks. Cold weather only increases the need for motor delivery. Merchants are already worrying over their holiday deliveries. They know that their horse equipment will be inadequate during the cold, snowy days and the rush and long hours of the Xmas trade and special sales.

We can guarantee prompt deliveries of Stewart Delivery Trucks in time for the winter business. We can furnish dealers their demonstrators almost immediately. Now is the time to go out and get this desirable business. Merchants are looking for the right car; one that is scientifically designed for hard delivery service. You can get their orders for Stewart Trucks now. Write for our literature and liberal proposition to dealers.

Stewart Motor Corporation, Buffalo, N.Y.

T. R. Lippard, Pres. and Gen'l Mgr. R. P. Lents, Sec. and Treas.
R. G. Stewart, Vice-Pres. and Chief Eng. R. W. Ingersoll, Sales Mgr.

R-C-H "Twenty-Five" $900

The Car Complete F. O. B. Detroit

Five-Passenger Touring Car

THE CAR—The best materials, the highest-grade workmanship, and the most up-to-date ideas in construction
EQUIPMENT—The most complete, highest-grade equipment ever placed on a popular-priced car.

Two Passenger Roadster, 110" wheelbase, $900, f. o. b. Detroit
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R-C-H CORPORATION, 104 Lycaste St, Detroit, Mich.

Cartercar

Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.

CARTERCAR COMPANY, Pontiac, Michigan

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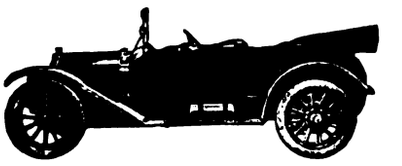
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THE ULTIMATE CAR
(KNIGHT TYPE MOTOR)

The first American Car to adopt the Silent Knight Motor—the engine used by Daimler, Mercedes, Panhard and Minerva.

THE F. B. STEARNS CO.
CLEVELAND, OHIO
Branches and Dealers in 125 Cities

Type 35 Series A and B Newport



$2,750 Fully Equipped

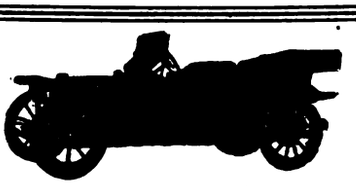
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THE CHAMPION LIGHT CAR

Lift up the hood of any Mercer and you will learn why it is "the most talked of" automobile in America today.

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WE have published a very interesting book on the advantages of Underslung construction. It is of value to dealer or individual. It tells of our full line which ranges in price from $1475 to $4500. Write for a copy today.

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Dept. E. **Indianapolis, Ind.**

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"The Easiest Riding Car In The World"

The Marmon "32"

32-40 H.P., 120-inch wheelbase, self starting, dynamo lighting, with body types to meet every requirement and corresponding equipment —$2,850 to $4,100

The Marmon "Six"

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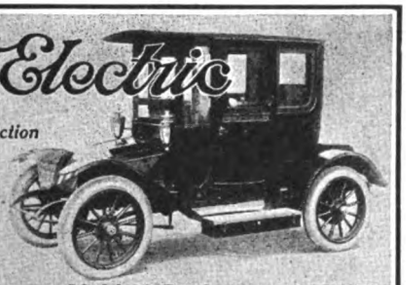
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INDIANAPOLIS (Est. 1851) **INDIANA**

Sixty Years of Successful Manufacturing

Buffalo Electric

Direct Drive—Single Reduction
Foot Control
Irreversible Worm Steer
Long Mileage Batteries
Buffalo Service



Model 29 Roadster, . . $2,600
Model 30 Coupe, . . . 3,200
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The Buffalo Electric Vehicle Company
Buffalo, New York

HAVERS "Six-44" • $1850

Touring Car and Roadster Types. 44 h.p. 6 Cylinders. Unit Power Plant, 3-Point Suspension. 122 in. Wheel-Base. 36 x 4 Tires.

HAVERS SIX

HAVERS "Six-55" $2250

Touring Car and Speedster Types. Electric Starter. Electric Lights. 55 h.p. 128 in. Wheel-Base. 36 x 4 Tires. Fully Equipped.

Write for full Specifications

HAVERS MOTOR CAR COMPANY, Port Huron, Mich.

Hook up with COLE

COLE

Series Eight comes in Three Chassis:

Cole Sixty six cylinder Touring Car, five passenger convertible to seven passenger, 132-inch wheel base, Delco electric lighting, starting and ignition. **$2485**

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WRITE TODAY for **Cole Blue Book** and dealer's proposition.

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"It's a Mighty Good Transmission!"

That's what the big car builders that use them say. It's the transmission that is specialized—still it is less expensive than if built by yourself. Write us.

COVERT MOTOR VEHICLE COMPANY
Sales Office: Ford Bldg., Detroit, Mich. Factory: Lockport, N.Y.

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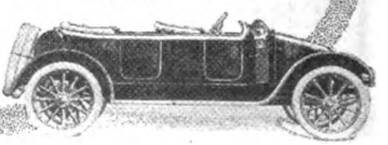
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THE UNIVERSAL CAR

It's the car that has "made good." In numbers far exceeding any other car—on all sorts of roads and under all sorts of conditions. Prices $525 to $800. Dealers everywhere. Ford Motor Company, Detroit, Mich.

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Croxton cars incorporate all of the features for which the buyer looks in the new models. Write for catalog and Agency details.

THE CROXTON MOTOR CAR CO.
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The Kentucky Thoroughbred
"AMES 45"

Long stroke, powerful Continental Motor—Electric (Dynamo) Lights — Self Starter — Left Hand Drive—Full Equipment—"Amesbuilt" Bodies and Tops. A combination of power, speed, endurance and graceful lines. Price, fully equipped, $1,635. This is 1913's most remarkable car value. Backed by a reputation of 30 years it will win you from the first inspection. We have a most liberal proposition for good, live agents. Send for catalog.

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Occupying the newest and most modern automobile manufacturing plant in America.

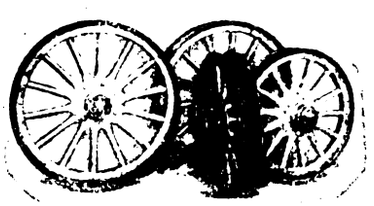
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Mighty Michigan "40"

40-Horsepower Touring Car or Roadster, absolutely silent in operation. Oversize tires 35 x 4½—cylinders 4¼ x 5¼ in.—118-in. wheelbase—four-forward-speed transmission—demountable rims—nickel mountings—massive, straight-line body—big, roomy seats—electric lighting by generator—everything. Price $1585, includes full equipment. Two smaller models. Catalog on request.



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"STANDARD" WHEELS

FOR PLEASURE OR COMMERCIAL CARS
One Passenger to 16 Tons Capacity

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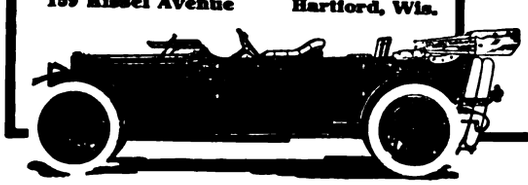
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Every part built in the KisselKar plant, which is equipped with every facility for economical manufacture. All KisselKars have extra liberal wheelbase and roomy tonneaus unsurpassed by any car at any price for comfort and capabilities. Write for catalog.

KISSEL MOTOR CAR COMPANY
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"Thirty"
"Forty"
"Fifty"
60 H.P. "Six"

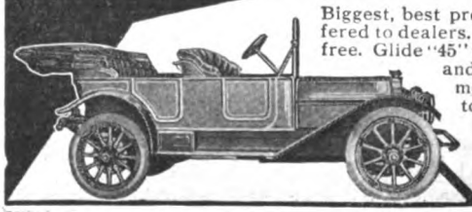
KisselKar prices include full equipment—self-starter, top, windshield, demountable rims, speedometer, electric lighting equipment, shock absorbers, etc.



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Model "45"—$2150

Biggest, best proposition ever offered to dealers. Illustrated book free. Glide "45" in Two, Four, Five and Seven passenger models. Write us today.



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K · D

The Motor With the Sliding Crescent Valve

KNIGHT-DAVIDSON

1896 — 1912

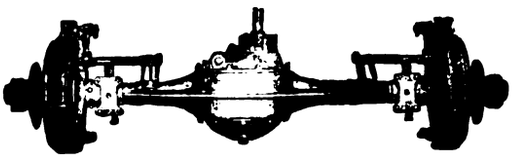
The CRESCENT valve of the K-D Motor, fitting around the stationary piston wall affords a larger port area than any other poppet or slide valve on the market. It is simpler and, consequently, better than any other valve construction known and is here offered to discriminating manufacturers, not as an experiment, but as a tried, tested and proved mechanical advance. The K-D motor is simple, silent, cools rapidly, has the simplest oiling system known, will not carbonize. Last and most important, will give on a given quantity of fuel more power, speed and endurance, unit for unit, than any other engine on any type of an automobile. We want to present some facts to interested manufacturers.

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AXLES



Write today for our booklet

THE AMERICAN BALL-BEARING COMPANY

Cleveland, Ohio

Dorris

Built to Last

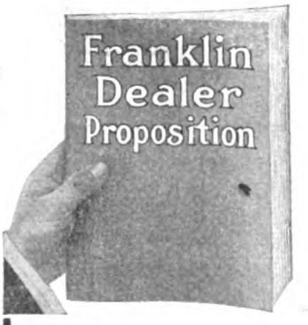
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St. Louis, U. S. A.

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NO matter what cars you now handle—get the Franklin Dealer Proposition. Franklin is now the third largest selling high priced car, and rapidly gaining on second. Reasons—less gasoline, less oil, no smoke, fewer tires, travels faster, rides easier, wears longer, silent, powerful, flexible, beautiful.

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"RAJAH"

SPARK PLUGS

Ignition Absolutely Sure

RAJAH AUTO SUPPLY CO. BLOOMFIELD, N. J.

Also Makers of RAJAH TERMINALS- the Best Made

Better Than Commercially Perfect

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$3,000,000 in plants affording the most superior facilities for fine work; also hardening and treating of the finished product. Most thorough inspection and testing system. Our own laboratory.

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Drop Hammer Forgings

cost very little more than castings. They are vastly superior and less expensive in the end.

WE ARE SPECIALISTS

in producing

DROP HAMMER FORGINGS

from special analysis steel.

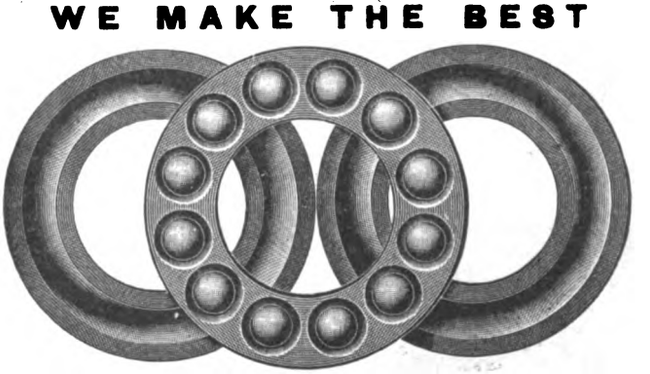
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1913.

QUALITY AND SERVICE GUARANTEED

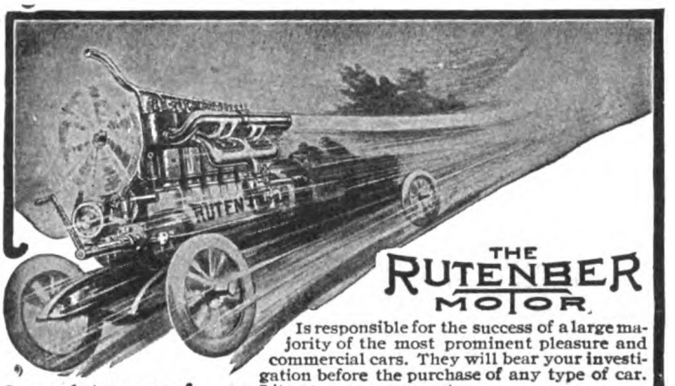
THE CONSOLIDATED MANUFACTURING COMPANY, Toledo, Ohio

WE MAKE THE BEST



BANTAM ANTI-FRICTION CO., Bantam, Conn.

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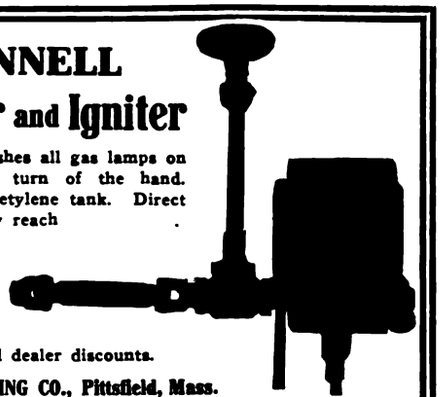
Is responsible for the success of a large majority of the most prominent pleasure and commercial cars. They will bear your investigation before the purchase of any type of car. Literature upon request.

RUTENBER MOTOR CO., Marion, Ind.

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THE GRINNELL
Gas Controller and Igniter

Lights, dims and extinguishes all gas lamps on the car through a simple turn of the hand. Coupled to valve-stem of acetylene tank. Direct control. Always within easy reach



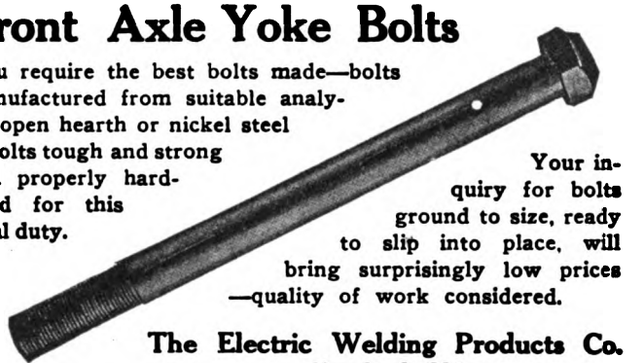
Convenient
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Sole Licensed Manufacturers for the United States.

Front Axle Yoke Bolts

You require the best bolts made—bolts manufactured from suitable analysis open hearth or nickel steel—bolts tough and strong and properly hardened for this vital duty.



Your inquiry for bolts ground to size, ready to slip into place, will bring surprisingly low prices—quality of work considered.

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The Reasons for Jencick Quality and Jencick Prices are worth knowing.

JENCICK MOTORS
For Motor Trucks

from base to spark plug, have features that are "Different and Better."

JENCICK MOTOR CORPORATION
Port Chester, New York

THE ONE MAN TOP



CAN BE HANDLED BY ONE PERSON AS EASILY & QUICKLY AS AN UMBRELLA
INSTANTANEOUS PROTECTION
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The Motor Lamps with Distinctive Features

There are no other motor lamps on the market with the advantages of Solar Lamps. Solars are always exclusive in style and in quality. They are the strongest lamps as well as the most effective.

In no other lamps can you obtain the Solar Special Short Focus Lead Glass Lens Mirror Reflector—the patented system of double ray light projection which gives two distinct fields of light for town and country use—or the new and exclusive black finish with a metallic lustre which is unaffected by heat or moisture. All of these features are exclusively "Solar."

Do not equip your car or specify equipment to the maker until you have seen all of the Solar advantages. See Solars at any live dealer's or write for the catalog.

Solars are made in all styles for oil, electricity, gas and in combinations.

Solar Lamps

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NEWTONE
Motor Horns

Prices are the lowest for which horns of Dependable qualifications can be bought



Torpedo Type
Price $20

Automobile Supply Mfg. Co.
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THE LONG HORN

The One Mechanical, Never Failing Warning Device

Costs Little to Buy—
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No Battery—No Wire—No Bulb—No Motor to break down or fail to work.

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Patent "Luxury" Folding Seats

Do you wish to make your car more comfortable by installing a pair of auxiliary seats? If so, have the best. Our seats are made in five styles. Send for catalogue.

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SPECIAL METAL STAMPINGS

Standard Universal Rims



fit any style or make of tires. The side rings are reversible, they curve outward on one side to fit a straight side tire, inward on the other to accommodate a clincher. Two turns of a nut unlocks the rim for demounting, two more turns locks the rim in place. Write for catalog 607, which explains fully.



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TIRE CUTS ruin casings. They admit moisture to the carcass, cause the fabric to rot and weaken, grow larger—end in blowouts.

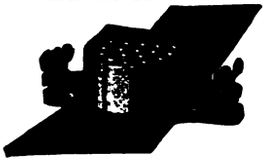
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Universal Auto-Vulcanizer

Patented

A practical vulcanizing outfit complete, with enough repair gum to make 40 patches. It weighs 3 pounds and can be carried in the tool box. **Simplest and most satisfactory device for eliminating tire troubles that has ever been devised.**

Absolutely automatic. Place the patch—attach the Vulcanizer—put in the gasoline—light it. No further attention required. In 15 minutes the job is done.



It *can't burn, scorch* or *injure* tube or casing. It *can't* get out of order. It *can't* fail to do its work. So simple, anyone can operate it. The Universal Auto-Vulcanizer saves its cost a *hundred times* over in trouble and expense.

Price Complete. **$4.00** Ready for Instant Use
Guaranteed Satisfactory or Money Refunded

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"Always There"

SPLITDORF PLUGS are gas-tight, soot-proof and unbreakable and never need monkeying with. Insist upon SPLITDORF—they are STANDARD.

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Any Kind Every Kind Stock, or to Blue Print

Rims

Clincher Q. D. Demountable Channels

For Automobiles, Motor Trucks, Aeroplanes, Motorcycles, Bicycles.

We Also Make Axles and Hubs.

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Diamond SAFETY TREAD (Squeegee) TIRES

Won't Slip-Won't Slide
Won't Skid-*They Grip!*

THE DIAMOND RUBBER CO. OF N.Y.
Subsidiary of The B. F. Goodrich Co.
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MR. SELLER, DO "MR. BUYER" a favor:

Sell him the car he naturally wants. Don't sell him the car he has to be educated to want. Sell him the car with the

BUDA MOTOR

We were in business 25 years ago and if you should want an interchangeable part 25 years from now we intend to be in business to supply it.


Model "T"

You don't have to "get at" a BUDA very often; but when you do, you'll appreciate its exclusive "get-at-ableness."

All the details are yours if you write to

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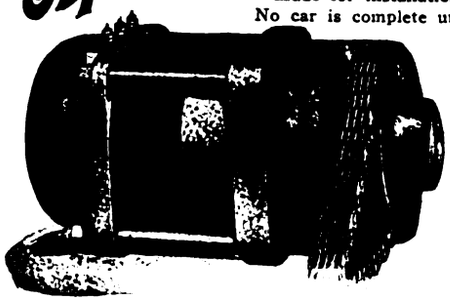
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Made for installation on all makes of cars. No car is complete unless electrically started and lighted. Write for booklet telling how to bring your car up-to-date. We have an interesting proposition for automobile manufacturers. Write for particulars.



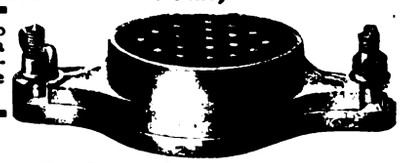
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Imperial Vulcauizer Repair Kit

(Pays for itself in a short time)

No electricity, no steam, no trouble. A little gasoline, a little rubber, a few simple directions, and you have repaired the puncture perfectly.



NICKEL PLATED
Patent Pending

Price $3.50 Complete with enough rubber for 40 punctures.

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Lamp Braoket

Pressed from cold rolled steel, light and very rigid. Send for attractive quotations.

DUPLEX EXTERNAL BRAKES



Reduce Your Chance of Accident

Work backward as well as forward. Have largest braking surface. Best in design and material.

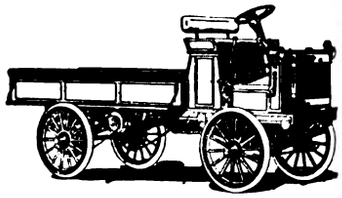
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We also make Raymond Brakes, Raybestos Friction Facing and Gyrex, the Mixer.

Sanford

Offers Dealers a Real Live Truck Selling Opportunity

Chassis with Driver's Seat and Dash $1660



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Here is a one ton truck at a price that will get the buying attention of every concern doing a light trucking business. Merchants and small manufacturers will quickly see the economy and wisdom of such a purchase.

Sanford Trucks are accessible in every part, in every assembly and in the entire assembly. Motor, 4 cylinder, 30 H. P., water cooled. Unit power plant, 3 point suspension. Clutch and flywheel enclosed in oil tight aluminum housing. Transmission, four speed selective. Heavy axle and spring suspension.

Lastingly good, therefore permanently popular.

The Sanford agency is good for the dealer. The Sanford truck is good for the owner. Write for terms.

The Sanford Motor Truck Company
SYRACUSE, N. Y.

Be Prepared

to meet the demand we are creating for you on the

NEW POSITIVE LOCK STOP

TWITCHELL AIR GAUGE



"Tire Insurance for $1.00"

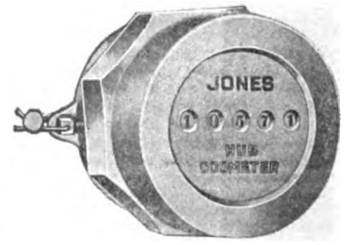
The best, simplest, most accurate, most durable and most easily read tire gauge on the market.

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HUB ODOMETER

Fits Any Standard Truck



As strong as the Hub itself. Made by JONES the speedometer man. No cheap stampings, no soft metals, no danger of inaccuracy.

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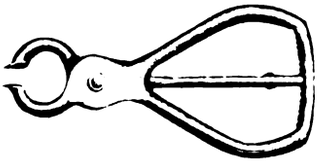
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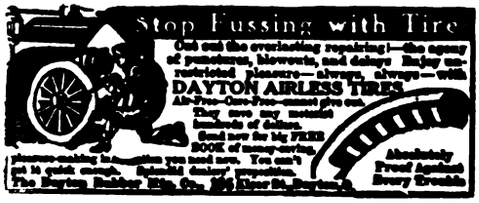
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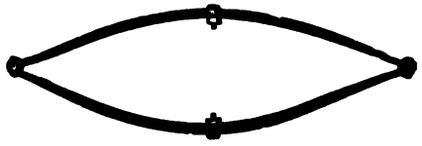


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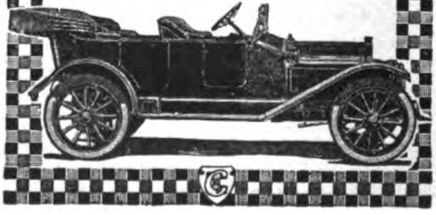
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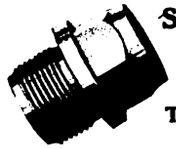
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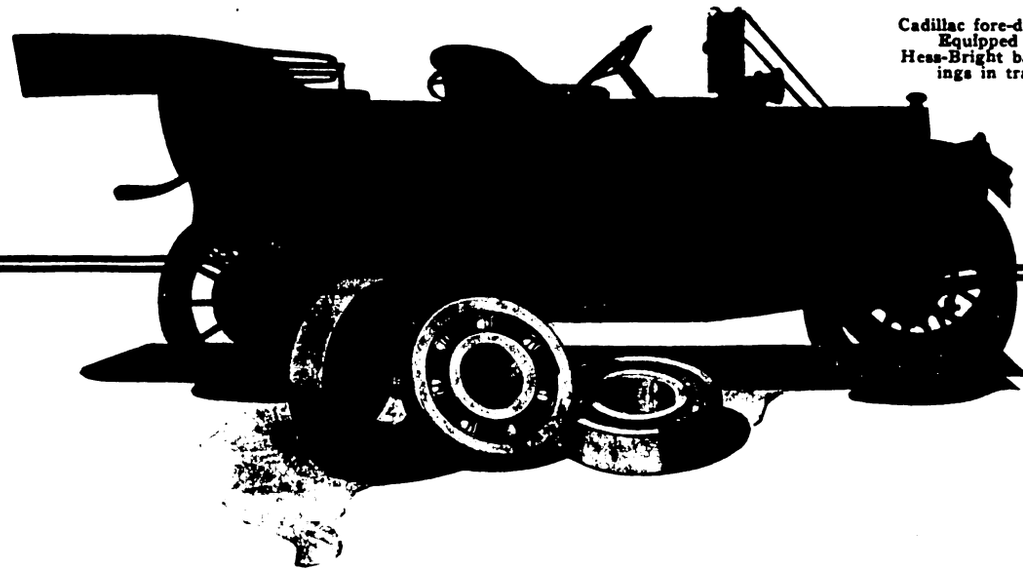
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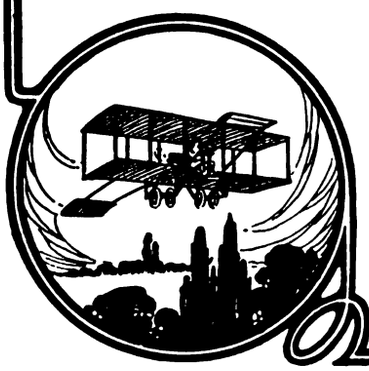
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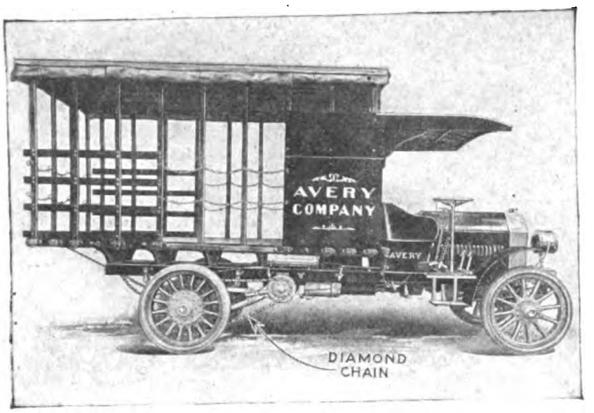
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CAPACITY 8,000,000 FEET PER YEAR

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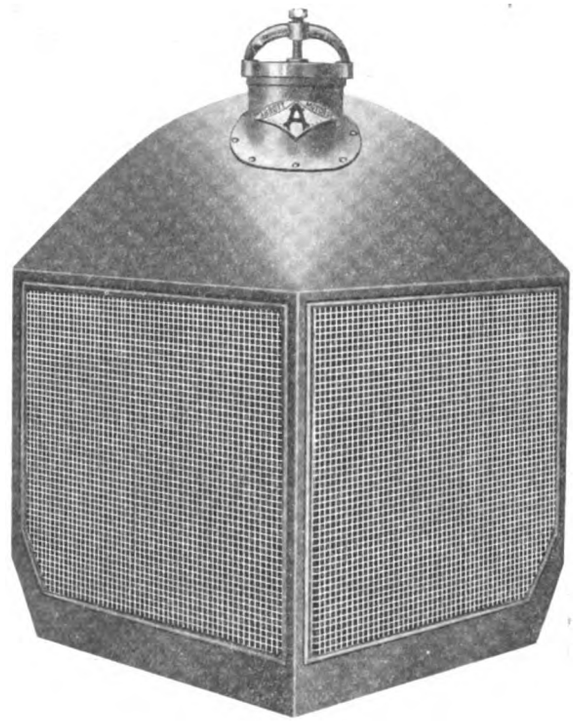
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Fedders Square Tube Radiators

Repaired With Ease By Any Tinsmith in Case of Accident



Fedders radiators are standard on a big line of pleasure and commercial cars. Automobile engineers specify them for the service they render.

Note that every individual square tube of the Fedders Radiator is completely surrounded by water and that passage obstruction is impossible owing to this form of construction.

In case of accident you do not have to lay up your customer's car while waiting for expensive and time consuming repairs incident to sending the whole radiator to the factory. It is only necessary to take out the tubes damaged and insert new ones —and this can be done quickly and at little expense.

Also note that these radiators are made of copper by far and away the best heat conductor known among the baser metals.

Write for our catalog today and have the above and other points of superiority amplified.

Fedders Manufacturing Co.
BUFFALO, N. Y.

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$985 Overland $985

Completely Equipped

Self-Starter
30 Horse-Power
5-Passenger Touring Car
110-Inch Wheel Base
Timken Bearings
Center Control
Remy Magneto
Warner Speedometer
Mohair Top and Boot
Clear Vision, Rain Vision Wind Shield
Prestolite Tank

High-priced feature No. 6

The great number of aluminum castings in the Overland Model 69T are a guarantee of its high quality. We use 8 tons of the first grade aluminum every day. It is especially heat treated—just as carefully as the expensive steels which go into the car.

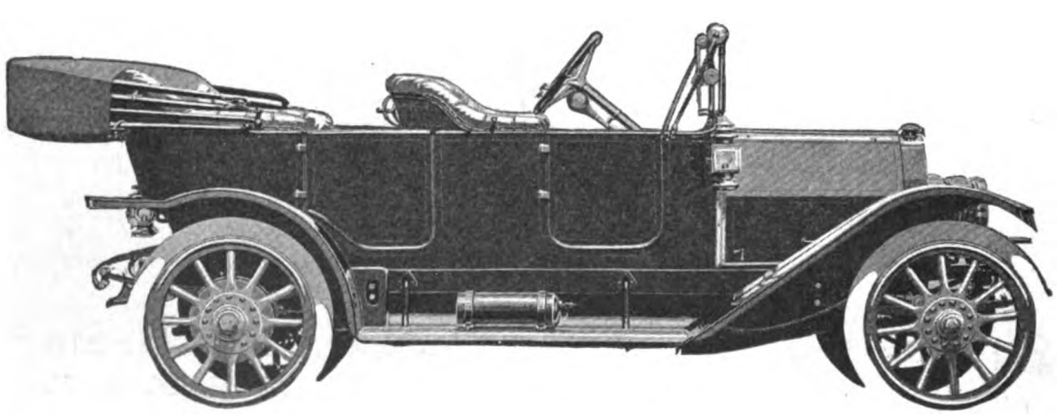
Aluminum costs many times what brittle iron does. It is tens of pounds stronger; its lightness reduces weight and saves tire bills

Overland 69T crank cases, gear cases, manifolds, hub caps, pedals, steering wheel spiders, etc., are all of A-No. 1 aluminum.

You will have to pay $1200 in any other line to duplicate this wonderful car.

A catalogue upon request. Please address Dept. 50.

The Willys-Overland Company
Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, December 5, 1912 No. 11

USE OF LETTER R CAUSES TWO MAKERS TO LOCK HORNS

Similarity of Names Chosen for Brake Linings Brings Sharp Conflict—Lawyer Sued Over Failure to Secure Copyright.

"Motobestos" and "Motorbestos" may differ by one letter, but they are so near alike that the Asbestos & Rubber Works of America and the American Asbestos Co. are spending considerable money to see who is entitled to a trade name of this description for a brake lining. The Asbestos & Rubber Works of America, which is located in New York City, is the coiner of "Motobestos," and the American Asbestos Co., located in Norristown, Pa., is the father of "Motorbestos." Each is a brake lining, the one product looks like the other, and the names are very much alike. Lest some wag interpose with the suggestion, it may be stated that the New York concern charges its rivals with having put the "r" in "Motobestos."

Both concerns have been making these products for some time. The first the New York company knew of the rival product was more than a year ago, when one of its salesmen demanded commission on "Motobestos" sold in his territory without his knowledge. Investigation revealed that what he had seen in a customer's store was the similar product.

Just which name was conceived and used first is unsettled. However, in August, 1911, the Asbestos & Rubber Works engaged Victor J. Evans, a patent attorney in Washington, D. C., to secure a copyright of the word "Motobestos." Seventy-five dollars were paid as the first fee. Meantime Edward H. Garcin, the company's president, went abroad, and when he returned was wroth to find, he claims, nothing done about his trade name; his first move was to secure a new attorney and demand that Evans repay the $75, which, of course, was refused, whereupon Garcin brought suit.

The new attorneys filed an application for "Motobestos" in January of the present year, and a few days later application was made for "Motorbestos." It was ordered that testimony be taken to ascertain which word and product was first on the market and thus establish which company has the greatest right to its nomenclature. This testimony is being taken in various parts of the country and a hearing on the applications will be had this month.

Tone Company to Produce a $900 Car.

Fred I. Tone, one of the best known automobile engineers in the West, who has served as chief engineer of the Overland and American establishments, has formed the Tone Car Corporation, under the laws in Indiana, with au authorized capital of $200,000, which amount shortly will be increased. Tone is president of the new company, W. P. Kirk, of New York, treasurer, and Mark H. Miller, of Indianapolis, secretary. It is probable that the factory will be located in Indianapolis and that a number of Tone's former associates will join him in the new enterprise.

The Tone corporation will build a $900 car which cannot well fail to command instant attention. It will be a five passenger model having a wheelbase of 110 inches, and employing a block motor, 3½ x 5, left hand steer, center control, wire wheels and electric lights and starter. First deliveries will be made in June next.

Trenton Empires Are Consolidated.

The Empire Tire Co. and the Empire Rubber Mfg. Co., of Trenton, N. J., have consolidated under the style Empire Tire & Rubber Co., capitalized at $1,000,000, equally divided into common and preferred shares. Charles H. Baker was chosen president of the consolidated company, of which C. Edward Murray, who was treasurer of both of the companies involved, became treasurer, and A. Boyd Cornell secretary.

HYDRAULIC DRIVE PATENTEE SUES ONE OF HIS LICENSEES

Manly Secures Attachment for Royalties and Other Claims Against Remington Standard Company—Matter of Long Standing.

Charles M. Manly, inventor of the hydraulic drive bearing his name and the chief figure in the Manly Drive Co., a New Jersey corporation with offices in New York, this week sued out a writ of attachment for $3,641.90 in the Supreme Court in New York County against the Remington Standard Motor Co., a West Virginia corporation with its principal office in New York and which is one of the licensees under the Manly patent.

Manly and the principals of the Remington Standard company have been on particularly cordial terms, but the latter, which produced at least one truck utilizing the Manly hydraulic drive, apparently has not made substantial progress and the inventor has tired of waiting for his due.

His claim is made up of three items, the first for labor and material, supplied between January 1, 1911. and July 31, 1912, amounting to $645.19, of which but $53.29 was paid, leaving a balance of $571.90; the second item covers a transmission sold to the Remington company March 29, 1911, the price of which was $1,200. Of this amount only $650 was paid, the balance due being $550; the final claim is for royalties. According to Manly's complaint, it was on July 7, 1910, that his company licensed the Remington Standard company, in return for which the Manly company was to be paid $2,500 a year, payment to be made within 30 days after the end of each calendar year. As the $2,500 due January 30th last has not been paid, Manly, of course, includes that sum. All of the claims were held originally by the Manly Drive Co. but have been assigned to Manly himself.

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N. A. A. M. TO CONSIDER PROBLEMS OF USED CARS

Creates Committee for Purpose; Also One to Deal With Annual Models —Prepares to Assume Duties of M. C. A.

Used car problems finally are to receive the serious attention of the National Association of Automobile Manufacturers. At the Detroit convention of the assiciation, last month, Hugh Chalmers suggested the appointment of a committee to deal with the subject, and the suggestion took practical form at the regular December meeting of the executive committee, which was held in New York yesterday, a committee on used cars being created, with Chalmers as chairman. The other members are as follows: O. C. Hutchinson, J. T. Farley, C. W. Churchill and F. A. Groves.

Also growing out of an address on the subject, delivered at the Detroit convention, H. O. Smith, of the Premier Motor Mfg. Co., was appointed the head of another committee on yearly models, which likewise was created yesterday. Smith is uncompromisingly opposed to the annual model policy. His fellow committeemen are W. H. Whiteside, Alfred Reeves, S. D. Waldon and Charles T. Jeffery.

The contest and demonstrations committee, which heretofore has consisted of three members, was enlarged to five, the new appointees being Howard Marmon and H. E. Coffin. Alfred Reeves also was named to succeed Benjamin Briscoe, resigned. The other members of the committee are H. O. Smith and Windsor T. White

Marmon is the present executive of the Manufacturers' Contest Association, in which office he succeeded Coffin. Their appointment on the N. A. A. M. committee marks the beginning of the end of the M. C. A., which, in fact, was an outgrowth of the N. A. A. M., being formed at the time that the latter body did not consider it the better part of wisdom directly to share in the direction or government of the sport.

The Manufacturers' Contest Association will go out of existence and most of its duties will be performed by the enlarged N. A. A. M. committee on contests and demonstrations. The duties are largely in the nature of consulting with and being consulted by the American Automobile Association. The N. A. A. M., however, has no intention whatsoever of taking an active part in either the promotion or government of the sport.

In response to an invitation of the Carriage Builders' National Association, Charles Clifton and H. H. Rice were appointed members of the advisory board of the C. B. N. A. technical school, to which the N. A. A. M. has been a contributor each year.

Because of a conflict between rival dealers' associations, the sanction granted by the N. A. A. M. to the Pittsburgh show was withdrawn and that city is now out of the official circuit.

One change in the membership representation was made, H. M. Jewett succeeding H. A. Lozier as the representative of the Lozier Motor Co.

To Continue American Commer Trucks.

One of the outgrowths of the receiver's sale of the Wyckoff, Church & Partridge property, to interests represented by Chester Griswold and Attorneys Howard C. Dickerson and George A. Ellis, is the formation of the American Commer Truck, Inc., which, on Friday last, was incorporated under the laws of New York with authorized capital of $10,000. As the corporators are merely lawyers' clerks, and as all those in position to speak still decline to give information, the whole meaning of the truck corporation is not plain, although evidently it is designed to continue the production of Commer trucks in this country, for which Wyckoff, Church & Partridge hold rights.

What American Commer Truck, Inc., will acquire is a matter for speculation. Among the Wyckoff assets of which it will not become possessed, however, is the real estate — salesroom and garage — at 56th street and Broadway, which has been sold to the Swetland Operating Co., which was organized for the purpose by H. M. Swetland, who was one of the largest creditors of Wyckoff, Church & Partridge.

U. S. Motor Receivers Oppose Bankruptcy.

The receivers for the United States Motor Co., against which a petition in bankruptcy was filed by three small creditors in Trenton, N. J., last month, have taken the first step in an effort to have the bankruptcy matter dismissed in order that the equity proceedings in the United States District Court in New York City may proceed and that the property may be sold January 8, according to the order of the court.

The step taken by the attorneys for the creditors consisted in the filing of a demurrer to the petition when the matter came up in the Federal court in Trenton, Monday last, 2d inst., the demurrer alleging that the petition is insufficient and not possessed of grounds for an adjudication in bankruptcy. The court set December 30 as the date for argument on the demurrer.

Overland Superintendent Goes to Europe.

H. L. Shepler, general superintendent of the Willys-Overland industries, has sailed to Europe, where he will spend two months.

U. S. TIRE MAKES START ON "BIGGEST PLANT IN WORLD"

To Double Morgan & Wright Factory in Detroit and Enlarge Other Works—Daily Output to Exceed 5,000 Tires.

What evidently is an impressive start toward that "largest and best tire plant in the world," which early this summer the United States Tire Co. announced its intention to build, has been made in Detroit. It will take the form of a doubling of the Morgan & Wright factory in that city.

Ground already has been broken for several new buildings and the work will be pushed as much as possible. When it is completed there will have been erected 16 new buildings, ranging in proportions from 2,000 square feet to 131,000 square feet. In addition to those assigned for manufacturing purposes, the structures will comprise a finely appointed laboratory and several enormous warehouses, also a huge boiler plant which will double the Morgan & Wright boiler capacity. All of the buildings will be of brick and reinforced concrete and those used for manufacturing will be equipped with the most modern machinery known to the rubber trade.

When the work is finished, the Detroit plant will have a floor space of more than 1,000,000 square feet, or twice its present size. It will also employ 6,000 workmen as against the 2,500 now employed, and its output, it is stated, will be in excess of 5,000 tires daily.

When announcement first was made that the United States Tire Co. was to build the "largest and best tire plant in the world," it was surmised that it implied ultimate concentration of its tire production in one plant, but that nothing of the sort is in view is indicated by the fact that, in addition to doubling the Detroit plant, the factories in Indianapolis, Hartford and Providence also are being or will be enlarged. In Hartford, a new power house and power plant has been built at a cost of more than $175,000; in Indianapolis, a six-story structure, 800 x 170 feet, is being erected; and in Providence a three-story building, 75 x 300 feet, is to be constructed.

Van Dusen and Warren for Themselves.

Walter H. Van Dusen, formerly assistant sales manager of the E. R. Thomas Motor Co., and Joseph Warren, until recently a member of the sales staff of the Abbott Motor Co., have joined hands and will set up in business in the Ford building in Detroit. They will act as manufacturers' representatives.

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MORGAN PREFERS BRITISH WORKMEN; SENDS MESSAGE

Having Prospered in America, he Opens Door to his Countrymen —Suggests How to Dodge Contract-Labor Law.

With the love of mother country warm in his veins, B. Morgan, who signs himself "M. S. A. E.," which is taken to mean Member Society Automobile Engineers, and who manufactures a number of automobile specialties in Newport, R. I., is seeking English help. Morgan came from the "tight little isle" some ten years since and, it is said, secured the favor of the late Col. John Jacob Astor to such good purpose that he became the head of his extensive private automobile establishment. Between times, Morgan evolved several specialties and still later set up a garage in Newport, where he has continued to prosper.

He now requires more help and, remembering the days and scenes of his childhood, is reaching into England for the mechanics which he most desires. He has written one of the British trade papers that they must be "good all-round men, capable of taking hold of a car and going right through with the repairs, even making parts, if necessary."

Morgan is familiar with the American law which forbids the importation of laborers under contract, but he has been over here long enough to learn that there are ways out of even that difficulty. Accordingly, he suggests that if any good Englishman who visits America will file an application with him he will have no trouble in securing a job. He promises, or holds out promise of, wages running from 30 cents to 36 cents per hour for the ordinary repairman up to 50 cents an hour for an A1 mechanic.

In placing the temptation before the English workers, Morgan assures "plenty of over-time," but does not guarantee uninterrupted work, as he suggests that when the busy season is over a good man can go South and secure employment, or else return to England.

"League" Demurs; Question Ford's Patents

After several postponements, the International Automobile League, of Buffalo, finally has filed a demurrer to the suit brought against it in the United States Supreme Court in Buffalo by the Ford Motor Co., of Detroit, in which a temporary injunction was granted.

The Ford complaint, which charges the so-called league with having infringed Ford patents by advertising or otherwise offering for sale, Ford cars at less than list prices, is attacked largely on technical grounds, in that the Ford company failed to allege that it is the sole and original inventor or discoverer of the improvements claimed, or that it failed to submit proof that it made application for the patents, or derived title thereto, in accordance with the then existing laws of Congress. The defense that no copies of the patents are attached to the bill of complaint also is set up in the demurrer, in which, however, the chief or most unusual point raised is that "it appears from the allegation that said bill of the Ford Automobile Co. has no patent upon the Ford automobile as a complete product."

It is upon these grounds that a dismissal of the complaint is asked by the league, which admits that it is a New York corporation composed of Alfred C Bidwell, John H. Tranter, William Priess and John C. Hurley.

New Departure Negotiating for Whitlock.

Negotiations are in progress which probably will result in the absorption of the Whitlock Coil Pipe Co. of Hartford, Conn., by the New Departure Mfg. Co. of Bristol, in the same State. The parties to the transaction have not yet agreed upon the price which, apparently, is the only stumbling block, but that the obstacle will be removed is indicated by the fact that the annual meeting of the Whitlock company, which was due to occur this week, was twice postponed in order to promote reconciliation of the difference between the two companies. The meeting now will be held on Wednesday, 18th inst.

In the earlier stages of the industry, the Whitlock Coil Pipe Co. seemed in a fair way of controlling the automobile radiator business in this country, but it gradually relinquished its manufacture, and during recent years has devoted itself wholly to the production of metal pipes of all description, engine manifolds among them.

Willard Purchases a Fourth Building.

Although little more than a month ago the Willard Storage Battery Co., of Cleveland, O., purchased the property adjoining its factory No. 1, thereby making the plant consist of three separate units, the company just has bought still another brick and steel building adjoining their premises, which will constitute plant No. 4. Although close together, each of the buildings is separate and distinct and three of them are individually equipped for the manufacture of storage batteries, regardless of what may happen to the other units. The most recent purchase will be used for storage purposes, but will be utilized for manufacturing expansion whenever necessary.

NEW YORK DEALERS ADOPT USED CAR DISPOSAL PLAN

Trading Cars Is Eliminated But Dealer Acts as Agent in Selling the Used Vehicle—How the System Is Applied.

After wrestling with the subject for a long time, the Automobile Dealers' Association of New York City finally has placed the stamp of its approval upon a plan which is calculated to inject a measure of business sense and relief into the used car situation, although the plan itself is not a new one, and, with slight variations, has been followed for some time by at least several dealers in the metropolis and elsewhere.

With minor changes to meet the conditions in the individual salesrooms the plan is that which has solved the problem for the A. Elliott Ranney Co., the Hudson dealer in New York, and which entirely eliminates trading; the company disposes of the customer's old car, but it does not trade. In connection with the disposal system. Several documents are used to record steps in the transaction.

When a man goes to the Ranney company to purchase a new car and desires to turn in his old vehicle, he is asked what valuation he places upon the old car and he then delivers it to the Ranney company, signing a blank which reads as follows

SECOND HAND CAR AGREEMENT.

I, the undersigned, hereby agree to leave with the A. Elliott Ranney Company for sale, my ..... automobile, and I hereby authorize the A. Elliott Ranney Company to retain from the proceeds of such sale the sum of ..... dollars to apply on the annexed order. The asking price for my used car is ..... dollars, subject to change in my discretion.

The A. Elliott Ranney Company assume no responsibility for loss or damage to the car by fire or otherwise.

Name .....

Address .....

Date .....

As is evident, this document authorizes the Ranney company to sell the car and to retain a certain amount from the proceeds. Should the asked price be $2,000 and the price of the new Hudson $1,600, the company would be authorized to retain $1,600 out of the $2,000, but should the asked price be $1,000, the company would be authorized to retain $1,000. When the used car is sold the company keeps the money secured for it and the customer who wishes a new Hudson pays the difference between the new car's price and what the old one sold for, provided this latter figure is less than the price of the new Hudson.

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Should the customer insist that he be given a new car immediately, he is asked to pay for it on delivery and whatever is secured for the old car is remitted to him as soon as it is sold, with no charge for the selling. In this case, a letter to the customer or some other written record cancels the clause authorizing the company to retain any of the money received for the used car. In case the customer does not want to pay outright for a new car and also does not desire to be without the use of his old car, even for one day, the company endeavors to arrange a sale while the customer retains possession of the car, the owner of the car and the prospective buyer being brought together at some time and place arranged. But under no circumstances will the company take the car in trade.

When the scheme first was inaugurated, a couple of years ago, the public was a bit slow in accepting this form of merchandising, but when the logic of the situation was explained the protest became insignificant. An added point of interest is that the Ranney company assumes no risk whatever; if the tires are bad when the car is received and there is likelihood that a blowout may result during a demonstration of the used vehicle, the owner's attention is called to this fact when the car is taken in and any blowouts are repaired at his expense. The non-assumption of risk applies in every particular.

If it is found after several days that the price asked by the owner of the used car is too great, bargaining is begun; he is informed of the best offer obtained, and if the owner concedes a point the prospective buyer is asked to come up a trifle, and generally satisfactory terms are reached. The Ranney company states that through this plan used cars seldom remain in their used car department longer than a week.

The buyer of the used car, if he does not pay cash, but makes a deposit, is given a receipt in the following form

Received from ..... the sum of ..... dollars as deposit on used ..... car, No. ....., to be delivered on the ..... day of ..... at agreed price of ..... dollars. Failure to accept delivery of this car on the date specified or failure to pay the balance of the purchase price, viz..... ..... shall be deemed a cancellation of this receipt, and the purchaser shall forfeit the deposit thereby paid, time being of the essence of this receipt. No guarantee or representation of any kind, nature or description is given or made by the A. Elliott Ranney Company not expressed herein.

When he makes final payment he is given this type of receipt:

Received from ..... the sum of ..... as final payment on the purchase price of ..... used car, No. .....

No guarantee or representation of any kind, nature or description is given or made by the A. Elliott Ranney Company not expressed herein.

After the sale is consummated the used car buyer gives the Ranney company this form of receipt for the car

Received from the A. Elliott Ranney Company ..... used car, No. ....., as represented to me at the time of the purchase.

No guarantee or representation of any kind, nature or description is given or made by the A. Elliott Ranney Company not expressed herein.

This paper states that he has bought it "as is" and that he takes it as it stands and for just what it is. The Ranney company makes no repairs and does no overhauling unless the owner of the car so orders; such orders, however, often are received in the expectation that, say, $50 spent on a car will increase its value $100 or $150.

At the meeting of the Automobile Dealers' Association last week, when the plan was endorsed, about half the members present expressed their approval by signing an agreement to follow the suggested system. The selling of the used cars, without any charge for this service, is not reckoned as a loss, but is classed as a legitimate expense of the business, like advertising, insurance and any other "overhead." The concensus of opinion among the dealers was that used cars always will have to be reckoned with and that the solution of the question is in the best way to handle them.

Much money has been lost through trading; cases have been known where prospective purchasers of cars have gone to used car establishments, bought an old car of the model they intended buying, paying, say, $500 for the old vehicle, and then have traded it in for $700, making $200 while the dealer lost that amount or more. "Shoppers," who properly are classed as better salesmen than automobile salesmen, frequently travel along "automobile row" and by telling "what so-and-so offered" for the old car, force the price up to an exorbitant figure. The dealer who acts merely as an agent in disposing of the used car is protected again such losses. A modification of the Ranney plan which is favored by some agents is the actual taking in trade of those cars which are of the same make as the dealer sells, all other makes to be sold for the account of the customer.

Charles A. Stewart, general manager of the Automobile Dealers' Association, in commenting upon conditions in New York City, said he was surprised when the reports of the members at the last meeting showed more cars to have been sold in 1912 than in 1911, despite statements that 1912 has been a poor year; he also expressed surprise when inquiry among the dealers developed that fewer used cars are on the salesroom floors this year than last. "This does not mean that used car conditions are good," he said, "for they are not. It means that last year some of the dealers found themselves pretty close to the wall because all their money was tied up in old cars, and consequently they are more careful this year; some of them, however, are still losing money through trading. The general situation, however, indicates that we are progressing toward the plane upon which we hope to place the business."

Changes Among Prominent Tradesmen.

N. H. Mineter has been appointed sales manager for the Findeisen & Kropf Mfg. Co. of Chicago, manufacturers of the Rayfield carburetter. Formerly, and for several years, he was identified with the Stromberg Motor Devices Co of the same city.

Emerson Brooks, one of the veterans of the industry, who for 20 years was vice-president of J. M. Quinby & Co., the Newark (N. J.) body builders, has acquired an interest in Burr & Co., body builders, at Amsterdam avenue and 75th street, New York City. He will devote himself to the sales and repair departments, but will retain his interest as a director in the Remington Truck Co. and the Manly Drive Co.

Henry M. Duncan has been appointed supervisor of the eastern district of the United States Motor Co. to succeed W. F. Smith, resigned. Previously, Duncan was general manager of the Westchester Appliance Co. of New York. His appointment places him in charge of the United Motor Companies in Syracuse, Pittsburgh, Washington and Atlanta. In addition, Duncan will act as the manager of the United Motor Philadelphia Co.

C. J. Pettit, manager of the Prest-O-Lite Co.'s New York branch, has been transferred to Minneapolis, from which point he will control three Prest-O-Lite depots—those in Minneapolis, St. Paul and Winnipeg, the latter of which constitutes an important part of the Prest-O-Lite system in Canada. The vacancy in New York caused by Pettit's transfer has been filled by the appointment of C. B. Clendenen, who formerly was connected with the company's headquarters in Indianapolis.

It transpires that C. F. Pratt, former president of the Ohio Motor Car Co., of Cincinnati, who was reported to have become vice-president and general manager of the Ames Motor Car Co., of Owensboro, Ky., really has been made vice-president and manager of the F. A. Ames Co., of that city, which, though affiliated with the Ames Motor Car Co., devotes itself wholly to carriage manufacture. George W. Yeoman is still the vice-president and general manager of the Motor Car company and says he has no immediate intention of relinquishing those offices.

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The Week's Incorporations

Grand Rapids, Mich.—Auto Equipment & Supply Co., under Michigan laws, with $10,000 capital.

Alpena, Mich. — Auto Sales Co., under Michigan laws, with $50,000 capital; to deal in motor cars.

Saginaw, Mich.—Garber-Butch Co., under Michigan laws, with $10,000 capital; to operate a garage.

Los Angeles, Cal.—Eastern Motor Car Co., under California laws, with $25,000 capital; to deal in motor cars.

Pittsburgh, Pa. — Hollis Motor Vehicle Co., under Pennsylvania laws, with $5,000 capital; to deal in motor vehicles.

Taunton, Mass.—S. & M. Co., under Massachusetts laws, with $5,000 capital; to deal in motor cars and operate a garage.

Hudson, Mass. — Raymond Engineering Co., under Massachusetts laws, with $150,000 capital; to manufacture and deal in motors.

Waterloo, Ia.—Repass Automobile Co., under Iowa laws, with $25,000 capital; to deal in motor cars. Corporators—O. A. Repass, C. L. Herring.

Houston, Tex.—Cartercar Co., under Texas laws, with $20,000 capital; to deal in motor cars. Corporators—R. H. Rushway, E. Emmert, C. D. Ferguson.

Des Moines, Ia.—Union Motor Co., under Iowa laws, with $10,000 capital; to deal in motor cars. Corporators—E. G. Plummer, Preston Offhill, W. H. Wilkins

Rockford, Ill.—Schlig Auto Repair Co., under Illinois laws, with $5,000 capital; to repair motor cars. Corporators—John J. White, John Schlig, Doris White.

Trenton, N. J.—Roberts Rubber Mfg. Co., under Delaware laws, with $1,000,000 capital; to manufacture tires. Corporators—F. T. Roberts, W. L. Watson, E. Horowitz.

Alton, Ill.—Alton Automobile Co., under Illinois laws, with $10,000 capital; to deal in motor cars. Corporators—Hugo F. Horstman, William Winter, Leo F. Winter.

Los Angeles, Cal.—Alcorn Rubber Co., under California laws, with $20,000 capital; to deal in motor car tires. Corporators—James A. Alcorn, C. F. Wickland, Jay Baker.

Kansas City, Mo.—England Bros. Motor Co., under Missouri laws, with $2,000 capital; to deal in motor cars. Corporators—Edward England, E. W. England, and others.

Jacksonville, Fla.—Atkinson Tire & Supply Co., under Florida laws, with $25,000 capital; to deal in motor car tires and supplies. Corporators—R. L. Atkinson and others.

Chicago, Ill. — Illinois Tire Filler Co., under Illinois laws, with $10,000 capital; to manufacture tire fillers. Corporators — Albert Jacobs, Anton Percival, Charles B. Stafford.

Asbury Park, N. J.—Cress Automobile Co., under New Jersey laws, with $250,000 capital; to deal in motor cars. Corporators—Louis F. Grice, Harry A. White, F. Frank Appleby.

Detroit, Mich.—Cragg Motor Mfg. Co., under Michigan laws, with $4,000 capital; to manufacture motors. Corporators — Edmund F. Allerman, Ida A. Cragg, Mayory G. Cragg.

Pittsburg, Pa.—American Motor Fire Apparatus Co., under Pennsylvania laws, with $1,000,000 capital; to manufacture motor fire apparatus. Corporators—T. F. Burchell and others.

Newark, N. J.—Touraine Motors Co., under New Jersey laws, with $37,500 capital; to deal in motor cars. Corporators—C. Edmund Van Vlieck, Jr., E. M. Dailey, Fred W. Kolb.

Chagrin Falls, Ohio—Falls Garage Co., under Ohio laws, with $10,000 capital; to operate a garage. Corporators—C. S. Gore, T. C. Waite, H. D. Bishop, T. H. Nuggett. A. H. Nuggett.

Morgantown, W. Va. — Colonial Motor Car Co., under West Virginia laws, with $10,000 capital; to deal in motor cars. Corporators—Arthur A. Exley, William E. Graham, Alva D. Wolfe, J. Howard Wolfe, C. William Cramer.

Detroit, Mich.—Gearless Differential Co., under Michigan laws, with $20,000 capital; to manufacture motor car devices. Corporators—George D. Bailey, William F. Trudeau, Frank Howarth.

Chicago, Ill.—Chicago Garage Owners' Association, under Illinois laws, to conduct an association for mutual benefit. Corporators—Wm. L. Rudd, E. A. Wise, Harry Salvat, B. F. Campbell.

South Bend, Ind.—South Bend Motor Car Works, under Indiana laws, with $10,000 capital; to repair motor cars. Corporators—John D. J. Farnemann, Alfred C. Mecklenburg, Hilton Hammond.

Grand Rapids, Mich.—Pneumatic Tire & Rubber Co., under Michigan laws, with $1,000 capital; to deal in tires. Corporators—W. O. Hughart, George T. Kendal, W. B. Gilbert, Thomas B. Bradfield.

Milwaukee, Wis. — Milwaukee Motor Show Association, under Wisconsin laws; to conduct an automobile show. Corporators—Emil Estberg, F. J. Edwards, G. W. Brown, J. A. Smith, P. S. Bates.

Toledo, Ohio—Willys-Overland Co., under Ohio laws, with $25,000,000 capital; to manufacture motor vehicles. Corporators—Walter Stewart, Isaac Kinsey, Royal R. Scott, A. H. Smith, G. W. Bennett.

Shelbyville, Ky.—Fawkes, Pulliam & Graham, under Kentucky laws, with $3,300 capital; to deal in motor cars and operate a garage. Corporators—George Fawkes, Harry Pulliam, E. Burnett Graham.

Rotterdam, N. Y.—General Vehicle Co., under New York laws, with $10,000,000 capital; to manufacture motor vehicles. Corporators—A. H. Jackson, S. L. Whitestone, J. F. Zoller, all of Schenectady, N. Y.

New York, N. Y.—Gross Auto Rental Co., under New York laws, with $5,000 capital; to rent motor cars. Corporators—Jacob S. Gross, Simon Gross, 241 West 143d street; Herman Strizver, 2327 Crotona avenue.

Richwood, Ohio.—Scharf Gearless Motor Co., under Ohio laws, with $5,000 capital; to manufacture motor cars. Corporators—George W. Wordem, John E. Scharf, W. N. Siples, E. M. Payne, L. J. McCoy.

Buffalo, N. Y.—Buffalo and Interurban Motor Delivery Co., under New York laws, with $125,000 capital; to operate a motor delivery. Corporators—J. George Berner, Clinton T. Horner, Wilbur B. Grandison.

Dayton, Ohio — Dayton Equipment Co., under Ohio laws, with $10,000 capital; to deal in motor car equipment. Corporators—Henry Stoddard, George L. Baker, Gilbert J. Loomis, W. C. Smith, Charles D. Heald.

Barker, N. Y.—Progressive Motor Car Co., under New York laws, with $30,000 capital; to deal in motor cars. Corporators—Arthur H. Terleeson, John B. Smith, Harry S. Schuhr, all of 175 Crescent avenue.

Chicago, Ill. — Lakeside Motor Truck Transportation Co., under Illinois laws,

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with $2,500 capital; to operate a garage and motor car livery. Corporators—A. C. Goldsmith, E. L. Shanci, Ambrose Risdon.

Memphis, Tenn. — Nolan Bros., under Tennessee laws, with $5,000 capital; to operate a garage and deal in motor cars. Corporators—J. W. Dickson, Dr. W. S. Anderson, E. Becker, E. Gerber, L. C. Nolan.

Cincinnati, Ohio—Northway Motor Co. of Cincinnati, under Ohio laws, with $600,000 capital; to deal in motor cars. Ralph E. Northway, William Pabodie, Wesley D. Fruste, Edward D. Decebach, F. B. Enslow.

New York, N. Y.—Kells Motor Radiator Corp., under New York laws, with $650,000 capital; to manufacture automobile radiators. Corporators—Corneilus A. Cole, Alexander F. Garbee, Henry A. Bingham, 32 Nassau street.

New York, N. Y.—Joseph H. Penders, Inc., under New York laws, with $25,000 capital; to manufacture and deal in motor cars. Corporators—J. H. Penders, Elizabeth Penders, Catherine Hahn, all of 218 East 49th street.

Huntington, Ind. — Huntington Auto Transit Co., under Indiana laws, with $25,000 capital; to operate a motor transit. Corporators—James M. Hicks, Samuel A. Stemen, John W. Caswell, Wesley W. Hawley, Oscar E. Bradley.

New York, N. Y.—Auto Record Publishing Co., under New York laws, with $10,000 capital; to publish a motor publication. Corporators—Charles A. Loring, 138 Pearl street, Boston, Mass.; John W. Buckmaster, 253 Broadway, N. Y.

Coldbrook, N. B.—Maritime Motor Co., Ltd., under New Brunswick laws, with $250,000 capital; to manufacture and deal in motor vehicles. Corporators—W. W. Skinner, W. G. Pugsley, George Gordon Hyde, George Williamson.

Minor Business Troubles.

Chester S. Norris, a repairman of Cambridge, Mass., has filed a voluntary petition in bankruptcy; his debts are $1,860 and his assets amount to $25.

Ralph Goldsworthy, trading as the Ohio Auto Carriage Co., at 1737 East 12th street, Cleveland, O., has filed a petition in bankruptcy; it shows liabilities of $12,348 and assets of $9,039.

Thomas F. McDonald, individually and trading as the Atlas Oil Co., of Atlantic City, N. J., has filed an involuntary petition in bankruptcy; he gives his assets as $1,027 and his liabilities as $3,346.

A voluntary petition in bankruptcy was filed last week in Trenton, N. J., by the C. B. Brokaw Automobile Co. of Plainfield, in the same State; liabilities are placed at $26,094.87 and asests at $29,749.74.

NATURE OF BANKRUPTCY MAY AFFECT PATENT RIGHTS

Involuntary Petition of Assignee a Possible Damage to Assignor—Federal Court Rules in Fault Finder Case.

Just how voluntary or involuntary bankruptcy may affect the assignor of a patent when the assignee is the individual or concern in bankruptcy is a point decided this week by Judge Hand in the Federal court in New York City in the case of the Automobile Fault Finder and Anti-Forgery Pen Co., a lengthy named concern against which a petition was filed several weeks ago.

Judge Hand's ruling was called forth when attorneys for the assignors of the patents asked that the petition, which is involuntary, be dismissed on the grounds that one of the petitioners was not properly a creditor because of the nature of the contract upon which he based the debt. There also was the statement that unless the assignees of the patents expressed or showed an unwillingness to utilize them they would not revert to the assignors. Therefore, if the petition had been dismissed it was the intention to submit a voluntary petition for the purpose of protecting the patent assignors.

To bear out this procedure the stockholders and directors of the corporation submitted to the court their willingness to file a voluntary petition and, acting with this in view, Judge Hand decided that this was sufficient evidence of the willingness of the company to cease using the patents and that this would protect the assignors. He stated in his memorandum that the company was apparently insolvent and that, while the creditor's claim was questionable as to rank in bankruptcy, the wisest procedure was for affairs to go on through the bankruptcy court without delay, whereupon the motion to dismiss the petition was denied.

Omaha Dealer Meets Frightful Death.

John J. Deright, president of the Deright Automobile Co. and J. J. Deright & Co. of Omaha, Neb., and one of the best known dealers in the West, committed suicide or met death accidentally at his own hands on Thursday forenoon last, 28th ult. He was found in a room on the second floor of his company's building with the entire right side of his head blown off by the explosion of two shells of a double-barrelled shotgun which lay at his feet. Although he had been subject to attacks of indigestion, his ailment was not serious and as he had been in a cheerful mood on the morning of his death there are those who believe that an accidental discharge of the gun occurred while he was cleaning it preparatory to a hunting trip. Deright located in Omaha 16 years ago. He came from Denver, where he had been in the bicycle trade, and when the automobile industry developed he promptly engaged in it and built up a fine business. He is survived by his widow.

Lawyer Heads St. Louis Tire Company.

The St. Louis Tire & Rubber Co., which recently was organized, under Missouri laws, with an authorized capital of $150,000, has elected officers as follows: President and general counsel, H. C. Barker, of Carter, Collins, Jones & Barker; vice-president and general manager, J. A. Swinehart, of Akron, O.; treasurer, William H. Glasgow. Directors—C. C. Collins, of the Missouri Lincoln Trust Co.; Roy F. Brittain, Cotton Belt R. R. Co.; Alfred E. Einstein, Union Electric Light & Power Co.; C. N. Skinner, Buxton & Skinner. The company will produce the Krotz solid tire and also a pneumatic tire, in which it is stated the fabric will be incorporated in somewhat unusual fashion.

Factory Promoter Freed by Court.

Four criminal charges which several months ago, at the instance of residents of New Castle, Ind., led to the arrest of William R. Hostetter, who figured as general manager of the Universal Motor Co., have been dismissed by the court. The complainants accused him of having obtained money under false pretenses in that they paid for Universal stock in the belief that the factory was to be erected in New Castle. When the factory failed to materialize, they "sicked" the police on Hostetter. Ground for the building of the factory still is unbroken.

Receiver for New York Lamp Company.

Following the filing of a petition in bankruptcy, Henry C. Quinby has been appointed receiver for the Knickerbocker Brass Goods Co., which manufactures automobile lamps at 405 East 124th street, New York City. The company's liabilities amount to $40,405 and its nominal assets to $47,820. The United States Motor Co. figures as the largest creditor to the extent of $12,000.

Marathon Dealer Sues Marathon Maker.

Because of differences growing out of an agency agreement, the Marathon Motor Works, of Nashville, Tenn., has been made defendant in a suit for $20,000 for alleged breach of contract brought by the Marathon Motor Car Co., of Greenville, S. C. The case will be heard at the March term of the Federal court in Nashville.

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In the RETAIL WORLD

Sledge & Rid are about to build a garage in Madera, Cal.

Orcutt & Buchanan are building a garage in Clearfield, Pa.

G. F. Cowden, Jr., is building a garage in Midland, Tex.

Benson & McMaster are erecting a garage in Lanesboro, Minn.

Gicord & Negus have let the contract for a garage in New Bedford, Mass.

Furcht, Fowler & Stinson are about to erect a new garage in Hailey, Ida.

Charles Deane of Grand Rapids, Mich., is building a garage at 307 State street.

A garage is to be constructed for William Melick, on Ann street, Stroudsburg, Pa.

H. B. Thrasher has established what is styled the City Garage, in St. Augustine, Fla.

Alpheus Lane of Paola, Kan., has sold the City Garage to J. W. Torrey of Kansas City.

Putnam & Tozer of Troy, N. Y., have taken over the garage business of Hillard & Rover.

Hull's Garage in Hagerstown, Md., has gone into the retailing of cars. Fords will be handled.

Charles Jenkins and Dart Northrup have leased the Wasco (Cal) Garage from Harley Kearns.

A garage is to be erected in Philadelphia, Pa., on Vine street, for Michele Lauria; its cost will be $4,800.

H. W. Reichert of Tipton, Ia., has taken over the interests of his partner in the Northwestern Garage.

John Barrett is about to build a garage in Indianapolis, on 30th street, the estimated cost being $30,000

The E. J. Kelley Co., of Torrington, Conn., plans to build a new garage, 70 x 90 feet, on Railroad square.

Home Service Garage is the style of a new business in Philadelphia, Pa. William Morroa is the proprietor.

A new garage is to be constructed in Charles City, Ia., for the O'Harrow Auto Co. The building will cost $5,000.

Carl B. and Lyman Spitzer have had plans prepared for a garage to be erected in Toledo, O. It will cost $12,860.

Stilz & Graessle of Nashville, Tenn., are remodeling their carriage factory into a garage; they also will sell Haynes cars.

Gustave Jacobson of Spring Valley, Wis., is about to build a garage in Hudson, in the same State; he also will stock Ford cars.

Scott D. Nichols, of Troy, N. Y., has leased a building on River street and will convert it into a garage; he handles Ford cars.

A new building has been erected at 1512 Broadway, Seattle, Wash., for Frank Waterhouse & Co. The firm handles Garford cars.

T. L. Duque of Los Angeles, Cal., has let the contract for a brick garage, to be erected on Grand avenue; the estimated cost is $12,500.

Frank Schellenger of Yuba City, Cal., has leased the Sutter Garage to Roy Worden and Jay Gould; they will conduct the business.

H. J. Strickler, who last March sold his interest in the Sheldon (Ill.) Auto Garage to William McCloud, has repurchased the business.

Fred Barnum, who conducted a garage in Naugatuck, Conn., at 52 South Main street, has disposed of the business to Richardson Bros. The latter operate a garage at 52 South Main.

Smith-Warner Motor Car Co. is the style of a new selling company in Nashville, Tenn., located at 600 Broadway; Americans will be stocked.

Thomas Oscar and M. O. Flom have formed a partnership and entered the garage field in Stoughton, Wis. Oscar & Flom is the firm style.

The Seller-Mountford Auto Co., of Algona, Ia., has dissolved; Mountford will continue the business under the style Mountford Auto Co.

The Southern Auto & Equipment Co. has established a repair and supply business in Atlanta, Ga., at 94 South Forsythe street; J. J. McNeal is manager.

George H. Bord of Troy, N. Y., is about to open a garage in what was a livery stable, on Liberty street; the remodeling of the building will cost $7,000.

C. D. Adams has arranged to represent the F. E. Murphy Automobile Co., of Minneapolis, in South Dakota; he will establish a garage in Sioux Falls.

E. L. Walden of Peabody, Kan., and A. C. Gray of Hollywood, Cal., plan to erect a garage and salesrooms in the latter town; they also will handle Ford cars.

Hood Auto Filling Station is the style under which a gasolene and oil supply company has opened up in Nashville, Tenn. It is located at 119 Eighth avenue.

The McKeesport (Pa.) Vulcanizing Co. has established a business at 214 Fourth avenue, in that city; S. L. Stitler and Harry Lebowitz constitute the company.

The Hofmeister Motor Co., of Watertown and Milwaukee, Wis., has purchased the garage operated in Jefferson, in the same state, by Clarence Puerner.

Plans have been prepared for a garage which is to be erected at Avenue B and East 20th street, New York City, by John W. Brookman; it will cost $25,000.

Walter S. Kidder, of Dayton, O., has secured permission to build a two-story brick garage at Grand and Salem avenues; the application names $4,000 as the cost.

M. M. Mays of New Springfield, O., has added his name to the list of dealers in that State; he will handle R. C. H. cars in parts of Mahoning and Columbiana counties.

The garage and machine shop of A. J. Parker & Co. and the Howell Garage & Supply Co., in Howell, Mich., have been consolidated; the style of the new business is Parker-Spencer Co.

P. F. Leeland and Hampton Mays have opened up a garage and repair shop on East Connor street, Jacksonville, Fla. They have styled their establishment "The Dixie."

Pope Motor & Cycle Co. is the style of a new copartnership just established in Oklahoma City, Okla., at 218 North Harvey avenue; it comprises J. F. Ide and L. G. Suggs.

Daniel Sylvester, a wagon builder in Flushing, N. Y., is about to enter the garage trade; he has awarded the contract for a one-story brick garage, 40 x 175 feet, to cost $10,000.

The Electric Co., in Victoria, B. C., has had plans prepared for a two-story concrete garage, 30 x 60 feet, to be erected on

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Discovery street adjoining the company's car barns; it will cost $10,000.

Samuel Houser and R. N. Hoews have formed a dealership firm in Omaha, Neb., and have located at 102 Farnam street. They have the Stevens-Duryea agency for Iowa and Nebraska.

The assets of the Tip Top Auto Co., of Hood River, Ore., have been sold to R. R. Carter and L. H. Goodenberger; hereafter the business will be known as the Columbia Auto & Machine Co.

The Riddell Auto Co. of Des Moines, Ia., is about to open a branch in Oskaloosa, in the same state; the agency will be used as an Overland distributing center for the southeastern part of the state.

The American Motor Car Co., located at 6016 Euclid avenue, Cleveland, O., has been reorganized under the style Northern Motor Co.; C. V. Lloyd is manager. American and Marion cars are stocked.

The Abbott Motor Car Co. has been formed in Cleveland, O., and will proceed to erect a building for its occupancy; temporary quarters have been secured at 2027 Euclid avenue. Abbott-Detroit cars will be sold; C. H. Davis is general manager.

R. F. Lindquist, a Tacoma (Wash.) business man, and for several years connected with the Standard Oil Co., has entered business for himself; he has established an agency for Miller tires at 755 South C street.

The Detroit Motor & Machine Co., which for several years has operated a machine shop on Hillger avenue, in Detroit, just has been incorporated with an authorized capital of $150,000, $75,000 of which has been paid in; the remainder is represented by property. The new capital will be utilized in the enlargement of the business.

Col. K. C. Pardee, one of the veterans of New York trade and who for many years was identified with the Maxwell-Briscoe interests, has returned to the business after a short retirement. He has secured the metropolitan agency for the Briggs-Detroiter car and established an attractive salesroom at Broadway and 61st street.

Recent Losses by Fire.

Chisholm, Minn.—Shannon's Auto Garage, damaged. Loss not given.

Atlanta, Ga.—Firestone Tire & Rubber Co., Auburn avenue, damaged. Loss not given.

New York, N. Y.—Forty-ninth Street Garage, 15 West 49th street, garage damaged and one car destroyed. Loss, $3,000.

Chicago, Ill.—Jackson Boulevard Garage, 1305-07 Jackson boulevard, garage damaged and four cars wrecked by explosion which caused fire. Loss, $10,000.

USED CAR DEALER SUED BY CAR OWNER IN MIXED DEAL

Automobile Is Replevined and Then Is Returned to Dealer—Latter Claims Owner Interfered and Blocked Sale of Car.

A Royal Tourist car of 1910 model, which was the property of Louis Talerka of New York City, would, if it had the ability, be very much confused as to whom its owner is and also as to where it is going next, all because of a lawsuit commenced in the New York City Court by Talerka against Green's Purchasing Agency, of Broadway and West 48th street, a used car establishment, which latterly has been figuring as the "auto department" of the not easily forgotten Manhattan Storage Co.

Talerka, it appears, turned over the car to the agency to be sold, placing a valuation of $1,000 on the vehicle. Just how much time the agency was to have in which to sell the car is disputed, but Talerka claims that when the specified time had elapsed he demanded his car and that it was refused. The agency alleges that it sold the car, but that before it could make delivery Talerka replevined it. The replevin order was granted in the City Court and delivered to a sheriff. The Green people then made claim that the undertaking on replevin was insufficient and the sheriff was ordered to give back the car to the agency. The next move was made by Talerka, who appealed to the Appellate Term of the Supreme Court for New York county, with the request that his undertaking he declared sufficient; if decision is favorable to him the sheriff will be called upon to give the car another of its checkerboard moves. Then may come a suit to ascertain whether the sheriff's last move was proper and, if it was not, the car may move back again.

Financial Straits Cause Stein to Quit.

The Stein Tire & Rubber Co., which has been a figure in New York's automobile affairs at 1741 Broadway, has withdrawn from the trade and the principal in the concern, Arthur S. Stein, has exchanged his position of merchant for that of salesman, being now connected in that capacity with the Howe Rubber Co., of New Brunswick, N. J. Unfortunate accounts are said to have had much to do with Stein's undoing.

When financial troubles began to loom threateningly the E. J. Willis Co., a Chambers street supply house, being the largest creditor, took a considerable portion of the Stein stock in payment, and only last week the remainder was taken over by the Auto Owners' Supply Depot, of 1773 Broadway. What accounts remain uncollected have been entrusted to the Sonora Motor Horn Co., which occupied a part of the same building that housed the Stein company. The Sonora concern has removed to 83 Chambers street and will busy itself for the next few months in efforts to collect the Stein accounts.

As a reminder of its business career, the Stein company appears in the New York City Court as defendant in an action brought by the Portage Rubber Co., of Barberton, O., in a suit based on a note for $4,376.33 for goods sold and delivered, and which went to protest in September. Another note, for $4,500, held by the Central Savings & Trust Co. of Akron, O., due October 21 last, also has been protested. Both notes are said to bear the endorsement of Arthur S. Stein, E. J. Willis and the E. J. Willis Co.

Oliver Truck Succeeds Oliver Car.

The jigs, dies, patterns, patents and similar assets of the Oliver Motor Car Co., which practically died borning, have been acquired from the receiver by a new corporation styled the Oliver Motor Truck Co., of which G. A. Meyer is president and general manager. Two other officers are F. J. Meyer, treasurer; R. F. Beach, sales manager; D. Brewster, superintendent. Temporarily, at least, the company will conduct operations at 460 Lawton avenue, Detroit, where it will produce the Oliver 1,500-pound light delivery wagon and the 3,000-pound truck which brought about the undoing of the old company.

Meyers Becomes Swinehart's Manager.

After casting about for the right man for a considerable time, the powers that be in the Swinehart Tire & Rubber Co., of Akron, have selected Clifford E. Meyers for the office of general manager. Previously Meyers was manager of the Diamond branch in Cleveland. Incidentally, A. E. Williams, formerly the Swinehart advertising manager, has gone to the Staver Carriage Co., of Chicago, in the same capacity.

Receiver Now Takes Whitesides Truck.

Following the closing of the plant by order of the directors, Mark Davis has been appointed receiver for the Whitesides Commercial Car Co., of Newcastle, Ind. From its beginning, a year ago, the company has lacked funds and never made much progress.

Parts Makers Take up Complete Chassis.

Heretofore confining itself to the manufacture of parts, the Nichoalds Co., of Detroit, has taken up the production of complete chassis for the trade. The company is located at 424 Grand River avenue.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN E. F. HALLOCK

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Advertising Manager
HOWARD L. SPOHN LOUIS R. SMITH

WESTERN ADVERTISING MANAGER
W. H. TRIPP, 1001 Ford Building, Detroit
GUS. H. JOHNSON C. H. HANDERSON
DETROIT, 1001 Ford Building CHICAGO, 1441 Monadnock Block
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ENGINE STARTERS AS SAFETY DEVICES.

Although on more than one occasion the engine starter has been eulogized as a "life saver" in both the slangy and pure English meanings of the phrase, the full extent of its far-reaching benefits are but gradually being comprehended.

As surely as wear is the greatest agent in the natural "dissolution" of an automobile engine, just so surely does any device which reduces wear act to prolong life, and it it here that the life saving role of the engine starter becomes apparent, for it encourages the practice of stopping the engine when the car is stopped temporarily. While the actual wear that takes place when an engine is "turning over" idly is very small, it no longer is necessary to endure even that small amount of wear in order to obviate the physical labor of setting the engine in operation again.

The manner in which it eliminates accidents due to cranking with gears in mesh often has been remarked, but there are occasions when the starter may serve equally important purposes, which hinge directly on the seeming proclivity of some motors to stall in crowded streets and thereby obstruct traffic, and to stop in even more dangerous places, of which a railroad crossing with a train approaching is a more or less familiar example that invariably places human life in jeopardy.

In such cases, where the car is fitted with an engine starter the engine can be quickly and easily re-started and the hazard is immeasurably reduced. Even when the engine refuses to start immediately under the persuasion of the starter, it is perfectly feasible with many such devices, particularly electrical devices, to propel the car itself with them out of danger and into safety. In short, the engine starter rightly may be considered as a factor of safety as well as a convenience.

THE EPIDEMIC OF "TIRE FILLERS."

It is quite evident that the idea widely obtains that there are millions to be made in the manufacture and sale of tire filling compounds. It is a dull week indeed when there are incorporated less than a half dozen companies with that end in view, and it is a poor company which cannot incorporate under the laws of Delaware with an authorized capital of at least $1,000,000.

Despite the unfavoring and unrelenting attitude of tire makers toward the use of such compounds, the number of tire filling enterprises already greatly exceeds the number of tire manufacturers, and if their increase continues there soon may be a tire filling company for every other separate tire that is produced, and the dictionary will be depleted by the efforts of word coiners to find apt or original designations for their respective compounds.

Several tire filling compositions have been on the market for a term of years, but at no time has their sale compelled world-wide attention. It is only within the last twelvemonth that the manufacture of such concoctions became epidemic, and the cause for it apparently rests in the remarkable success achieved not so much from the sale of a particular filler as from the sale of stock, "state rights" and other "rights" by several groups of shrewd men who seized the opportunity—or created it—and made the most of it.

Regardless of the merits of tire fillers, it is fairly plain that when the epidemic shall have run its course the number of sadder but wiser persons will have been greatly increased.

TRUCK LOADS AND LEGAL REQUIREMENTS.

Whether or not it becomes law, or whether it even gets so far as to come before the legislature, the proposal of the New York State Highway Commission to arbitrarily limit the maximum weight to be carried by a single motor truck axle, with the object of preventing the injury which heavy motor trucks are alleged to have caused to road surfaces, will at least have the effect of calling attention to the fact that there is a practical way in which the law may be obeyed while carrying loads that would overload two axles. That is to say, three axles can be used.

Trucks of the three-axle or so-called semi-trailer type, in which the front end of a load-carrying two-wheeled trailer is supported on a fifth-wheel on the frame of a short tractor, have been demonstrated to be entirely practicable, the principle having been adopted by a number of builders. Not only is the weight distributed over three axles instead of only two, but the load can be heavier in proportion than is usual in two-axle trucks and an approximately equal distribution of weight over the three axles is possible.

Should the proposed amendment to the highway law be enacted there is no doubt that manufacturers would be able to design three-axle trucks of paying capacity without exceeding the proposed limit of four tons per axle.

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S. A. E. SCHEDULES ANNUAL THREE-DAY WINTER MEETING

Sessions Will Be Held in New York's Newest Hotel—Papers To Be Read and Subjects for Discussion

Changing slightly the program that was adhered to last January, the annual winter meeting of the Society of Automobile Engineers which is scheduled for the three days beginning January 16 next, will be held at the Hotel McAlpin, at the corner of 34th street and Broadway, New York City, instead of at Madison Square Garden. As was the case at the last winter meeting, the session is to be preceded by a meeting of the Standards Committee, which will be held at the headquarters of the society at 1786 Broadway on Wednesday, January 15th; it is called for 9:30 in the morning.

Business and professional sessions of the Winter meeting proper will be commenced at 9:30 on Thursday morning, January 16th, and will be continued in the afternoon at 2 o'clock and on Friday morning and afternoon. Friday evening, January 17th, has been reserved for the annual dinner, and business will be suspended with the termination of the last session on Saturday morning.

Among the papers and reports which will be discussed at the meeting, some of them having been held over from the Summer meeting cruise, are. Effect of Relation of Bore and Stroke in Automobile Engines, by John Wilkinson; Stability of Automobile Propeller Shafts, by J. M. Thomas; Method of Brake Capacity Determination, by S. I. Fekete; Leaf Springs, by L. J. Lane; Standardization of Drawings, by George W. Dunham.

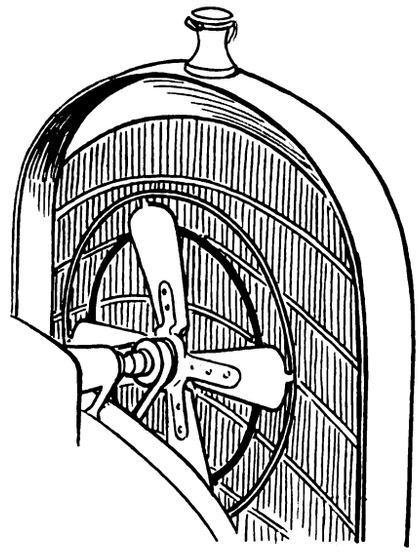
In all probability at least some of the following subjects also will be treated of either in papers or by discussion: Motor sizes for trucks; comparative data on motor tests; relation of road testing to dynamometer testing; worm gears; magneto couplings; relation of design to construction of motor cars; will the six-cylinder motor eventually displace the four-cylinder motor for pleasure cars? Is the transmission preferably located on the rear axle as a separate unit or combined as a unit with the power plant? Why has the 42-inch wheel been discarded? With the electric starter, lighting plant and ignition possible in one unit, will the magneto be discarded? Wire wheels.

London Show Breaks Attendance Record.

If figures go to prove anything, the popularity of the automobile show is not wanting abroad. During the eight days and nights the London show was open to the public, 255,112 persons passed the turnstiles, as against 226,095 in 1911 and 218,908 in 1910. Each year, Wednesday proved the largest single day, the attendance figures for that day each year being 38,115, 38,746 and 48,749, respectively.

Little Known Features of Well Known Cars

It is the protection afforded the more delicate and easily deranged parts which have to do with the proper functioning of the car that has made the modern automobile reliable. While it is not always feasible so to strengthen a part that it can bear without ill effect all the blows that are directed toward it, in nearly all cases it is possible to arrange some sort of a contrivance to relieve the more delicate parts of the strain.



RAMBLER RADIATOR PROTECTION

Such practice is common with the car owner as well as with the manufacturer, as exemplified by the fitting of a bumper for the protection of the radiator. It is rare, however, that the practice is extended so that the radiator is protected from blows directed at it from within the hood. Such, however, is the case with the Rambler car, on the radiator of which is is fitted a guard to prevent injury in case a fast whirling fan blade should become loosened, or so bent as to be able to contact with the fins on the cooler tubes. As shown in the sketch, the device is nothing more nor less than a circle of quarter-inch wire, of slightly less diameter than the fan, and which is soldered on the radiator fins directly in front of the fan.



December 7-22, Paris, France — Paris Salon.

January 2-10, New York, N. Y.—Importers' salon in Hotel Astor.

January 4-11, Montreal, Can.—Annual automobile show in the Drill Hall and Armory, under the auspices of the Automobile Club of Canada.

January 6-11, Cleveland, Ohio—Cleveland Automobile Show Co.'s exhibit in the Central Armory.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, Philadelphia, Pa.—Philadelphia Automobile Trade Association's exhibit in the First and Third Regiment Armories.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

January 21-26, Toledo, Ohio—Annual show in the Exposition building under the auspices of the Toledo Automobile Shows Co.

January 25-February 1, Providence, R. I.—Annual show of the Rhode Island Automobile Dealers' Association in the Providence State Armory.

January 27-February 1, Ottawa, Can.—Annual show of the Ottawa Valley Motor Car Association in Howick Hall.

January 27-February 1, Scranton, Pa.—Third annual show of the Scranton Automobile Dealers' Association in the 13th Regiment Armory.

January 27-February 1, Detroit, Mich.—Detroit Automobile Dealers' Association's Show in the State Armory.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

February 8-15, Hartford, Conn.—Sixth annual show of the Hartford Automobile Dealers' Association in the State Armory.

February 10-15, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Commercial vehicles only.

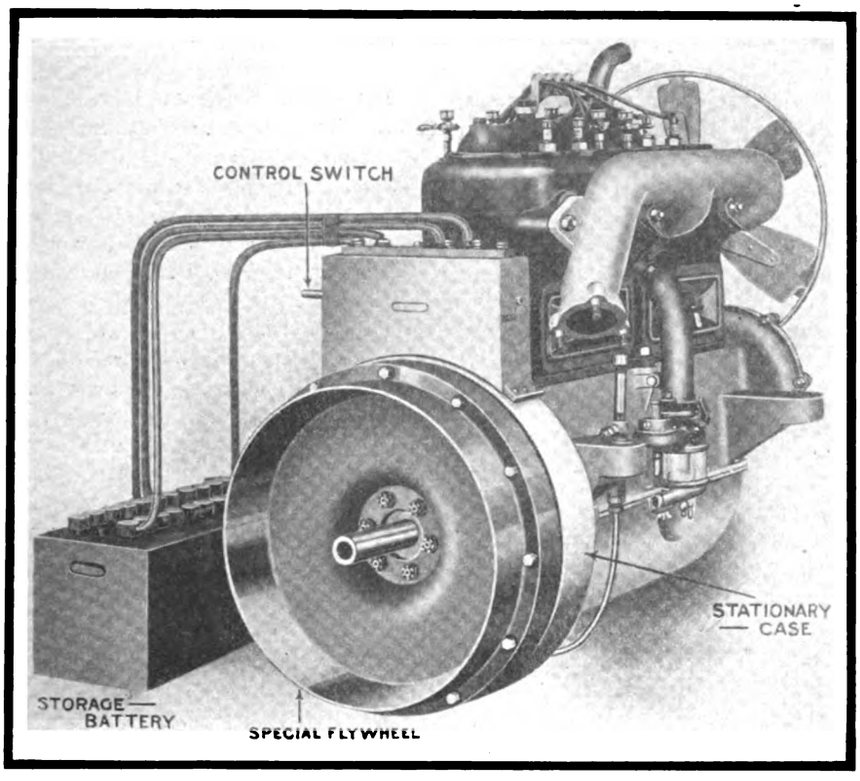
February 10-15, Minneapolis, Minn.—Minneapolis Automobile Show Co.'s show in the National Guard Armory.

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APLCO ADDS FLYWHEEL TYPE OF LIGHTER AND STARTER

It Is of Combined Motor and Generator Pattern With Only One Moving Part—Simple Control Mechanism.

Supplementing other electrical apparatus, prominent among which is a lighting system and a combined lighting and engine starting system, the Apple Electric Co. of Dayton, O., has developed and brought out another new lighting and starting system which is radically different from anything that has borne the Aplco trademark in the past and which is calculated to overcome any and all of the objections, hypothetical or otherwise, that may have been raised against other systems.



APLCO FLYWHEEL TYPE LIGHTER AND STARTER, SHOWING ELEMENTS

The new Aplco system is of the pattern known as the flywheel type, in contradistinction to the previous Aplco combined system designed to be driven and to drive either through the timing gear train or through some other convenient rotating shaft. It differs in several respects from other such flywheel systems, however, and has the advantage that it may be applied to any existing engine without the necessity for altering either design or construction to any considerable degree.

Briefly, the new system consists of two units, one of which is attached to what is described as a pad on the frame of the motor and the other is bolted directly to the flywheel, the appearance of the apparatus as attached to a standard motor being shown by the accompanying illustration. The field, which is of the multipolar type, is contained within the armature, the latter being bolted to the flywheel and rotating about the field. The mechanism is completely enclosed in a stationary aluminum case upon the top of which is mounted the control unit.

The controller is a modification of the controller furnished with the older type A6 Aplco lighting and starting system and incorporates a number of improvements calculated to render its action more efficient and more automatic. One of its features is that it is equipped with the distinctive Aplco "stop charge" device which automatically reduces the amount of charging current to the battery in proportion as the battery approaches the fully charged state. Similarly, it also increases the charging rate as current is drawn from the battery for lighting or starting.

For starting and for lighting the voltages are 6 and 12, respectively, the battery being of the 12-volt size. Manipulation of the controller handle for starting automatically connects the battery for a pressure of 12 volts, causing the combined dynamo and motor to "spin" the engine at approximately 120 revolutions a minute until it picks up its own cycle of operations, when, if the starting handle is released, it is spring-returned to the "stop" position, effectually preventing the battery discharging itself through the motor when the current is not needed. Altering the position of the starting handle to the "running" position automatically rearranges the battery connections so that the battery receives its charge at the rate of 6 volts. The generator commences to charge the battery, provided, of course, that charging is necessary, at 250 revolutions a minute. Control of the output is entirely automatic and is held within the limits prescribed by experience as the most advantageous to the battery. The simplicity of the mechanism is indicated by the fact that but four wires are required to carry the current from the battery to the controller.

Michigan Fourth Speed Not an "Overstep."

Although the pen is said to be mightier than the sword and its influence is known to have altered the destinies of nations, it is powerless to alter the mechanical construction of a gearset, for instance—except on paper. Consequently the four-speed gearset with which the Mighty Michigan cars are equipped remains of the type in which high speed is direct drive and is not, as inadvertently was stated last week in Motor World, an "overstep" with direct drive on "third." In designing the Michigan four-speed gearset, the manufacturers have worked on the hypothesis that true arithmetical progression in gear changing is productive of the greatest efficiency and flexibility and for this reason the gear changes in Michigan cars have been arranged so that they virtually represent speed ratios varying by a common difference, as 1, 2, 3, and 4, with direct drive on fourth.

Will Make Inner Tubes in Sections.

The Roberts Mfg. Co., of Trenton, N. J., which recently was incorporated under Delaware laws with an authorized capital of $1,000,000, has in view the production of a sectional inner tube for automobile tires, the first of which are being produced in a plant in Trenton. The tube, which is the invention of Frederick T. Roberts, the moving spirit in the company, is made up of 10 separate sections, in each of which are 32 cells running the length of each section. Each cell is filled with compressed air, the ends of the tube being vulcanized to prevent its escape. In the event of a puncture, it is the idea that only a comparatively few cells will be affected and that the substitution of an unpunctured section immediately will repair the difficulty. In other words, instead of carrying "spare" inner tubes, the motorist will have need only to carry the "sections," each of which are about 10 inches long.

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WHY BUSINESS DOESN'T COME

Dealer Should Find Answer to This Question If He Wishes to Overcome Obstacles—Inaggressiveness a Cause.

What is the reason I don't get the business that I don't get? is a question that every dealer can afford to ask himself again and again until he has arrived at a satisfactory answer. Indeed, unless he does ask it of himself and puzzle over it till definite conclusions are arrived at, his business is quite likely to stay just as it is and the number of customers to remain about the same.

One of the secrets of successful salesmanship is careful planning. And to plan carefully one must take into account all the negative influences as well as those in his favor. No successful salesman is ever satisfied. Just as he studies his successes to get out of them the pure gold, so he studies his failures until he wrings from them the elements of weakness.

Analysis of Failures.

Many dealers easily can answer the question by admitting to themselves that the reason they did not get the business they failed to get was that they did not go after it aggressively, persistently and intelligently. Others would have to confess that they simply took what came and did not seek to analyze why more did not come. Still others might deceive themselves by fancying it was entirely a matter of price, when it was not.

But price-cutting is not salesmanship. The majority of people are not throwing away money; on the other hand, where value is established decisively and thoroughly the average man does not look for or expect a cut.

There must be some real reason. What is it? Do not give up till you have nailed it down. There is a cause wherever there is an effect. If one study causes and effects he shall soon know just what is necessary to be done to get the orders that he failed to get.

Business develops just as it is made to develop; it increases just as it is planned to increase if the plans are made with intelligence from the standpoint of actual facts.

THE CUT PRICE EXPLAINED.

If the meaning of a cut price is explained to a prospect he will rarely pursue the subject further.

Every car on the dealer's floor depreciates in value the minute he cuts the price of any one of them. News of cut prices travels like fire. Not only do the friends of the man who gets the car know it, but the other dealers know it, and the result is that when, after a year or two of use, the purchaser of the discount car wants to trade in his car he finds that the dealer, in arriving at values, will make his starting point the discounted price instead of the list price—so he has gained nothing.

Every business man who has it explained to him that, where one has to divide the money with the customer he cannot give the service, is quick to appreciate that he to cannot expect to have his cookie and his penny, too.

DOUBLE VALUE FROM POSTAGE.

It is just as important to advertise to the customers you already have, and thus sell them more goods, as it is to advertise to people who have never done business with you. Indeed, it is far more important. You know the credit standing of those with whom you are doing business and they know you; logically, it ought to be much easier to sell them anything.

Every bill and every statement that goes out of your office should carry with it a reminder of something you sell. Sometimes your lines of cars and their advantages, sometimes your repair shop, your garage facilities. At other times, like fall and winter, it is good business to advertise the things that appeal particularly at those times. At the present time tire chains, non-skid tires, non-freezing oils, anti-freezing solutions, all can be made profitable subjects for brief, pointed advertisements on slips three and a half inches wide by six inches long.

As a matter of fact, several of these slips touching on different articles would prove profitable business producers. Postage, when used as suggested, costs nothing and the investment for printing is so slight as to be negligible.

One dealer sends every customer hints on care of cars during the winter season with various cautions, etc., that are greatly appreciated and help accent his desire to preparations, thus missing a good part of the selling season.

PROFITS POSSIBLE IN WINTER.

The minute cold weather starts the demand for alcohol and other non-freezing solutions is very active. There is money to be made supplying this demand, and the wise dealer will cash in on it. Too many garagemen wait until the freezing weather actually arrives before pushing the various preparations.

The sign should be up now and be big enough to force attention from every regular customer and every transient.

Incidentally, the cold winter months offer many other opportunities to the energetic garageman. For example, in every locality there are numbers of people who have private garages which are unheated. If these people were circularized and the advantages of keeping their machines in a warm garage during cold weather were pointed out, it would help to bring in many new boarders and at the same time create a new market for many other forms of garage service.

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AWAKE-N DISING WORLD

OPPORTUNITY IN NEW MODELS

Creation of Fresh Interest Easy at Time When Latest Cars Arrive in the Salesroom—Methods Dealers Have Used.

When the new models come in, the automobile dealer has a wonderful opportunity to create fresh interest in the line he sells; for, regardless of what the motorist may be driving at the time, he is always interested in examining new cars and observing improvements.

How to get the people into the store, however, is a problem that has many angles, all of which are well worth studying. The announcement in the local paper is, of course, a natural and a logical method of attracting attention and can be made very effective. But this is not the only means of stimulating interest, and the dealer who is actively seeking business will not let his efforts rest there.

Effectiveness of Mailing List.

One dealer who has been successful makes a specialty of having an up-to-date mailing list. This list includes every one who has purchased a car from him during a period of four years, the names of every automobile owner in his territory and a very complete list of "A1" prospects (not owners) which has taken much time and effort to compile. To each of these he mails a neatly printed invitation the day before the newspaper announcement appears. Thus the big newspaper advertisement is in the nature of an effective follow-up to the personal invitation.

Taking Advantage of the Telephone.

On top of this, after the second day and for the ensuing three or four weeks, the salesman on store duty takes his list of prospects and extends telephone invitations to a score of them to drop in that day. While telephoning the salesman makes it a point to incidentally ask the prospect the names of any friends who might be interested, and thus many valuable additions to the list are secured.

As a result of this systematic work, many sales are developed and the most is made of a big opportunity.

OPERATING THE GARAGE'S DOORS.

Whoever drives into the North Woodward Garage of Edwin Brosch, in Detroit, appreciates the fact that he does not have to step out of his car to open the garage door, as in many places, nor does he have to sit in his car and toot his horn while waiting for a busy employe to find time to come and open the door.

Within convenient reaching distance is a rope, a slight pull on which opens the doors. The man in the rear of the garage pulls another rope and the doors close automatically.

Going out again, a rope from the inside is pulled and again the doors open without any fuss or trouble, and in the same way are they again closed by one of the garagemen.

It is done by means of ingeniously arranged sash pulleys and weights. The idea is simple and practical and makes a strong hit with car owners; also it renders unnecessary the horn tooting that often amounts to a neighborhood nuisance. It is worthy of wider adoption.

THE DEALER AND ADVERTISING.

Advertising is not a magical Aladdin's lamp to be utilized by the dealer only at such times as he desires instant increase in his business. Advertising is more like the good salesman who goes on his way making his daily round of calls, convincing some, but not able to close for reasons that cannot be overcome in a day; half convincing others that another call will enable him to close; making a sale here and there, but always building up the reputation and influence of his house and adding to its prestige, and in the end making a very profitable showing.

All of which means that advertising should be used systematically, regularly, not in occasional flashes.

Advertising should be regarded as an investment, not as an expense. And each advertisement should drive home some real point about the goods. After reading it, a new point, a solid fact should be lodged in the reader's mind. Continued effort along such lines is bound to prove profitable.

Most manufacturers have an advertising service department and stand ready to furnish not only good electrotypes but excellent copy that can be used to advantage by dealers handling their cars.

Many accessory and tire manufacturers pursue the same policy, so that to-day it is easy for the dealer who wants to advertise to get the right illustrations and the right text that will add reputation and business.

PROOF OF REAL SALESMANSHIP.

Real salesmanship is nothing more nor less than the establishing of a thorough appreciation of the value of the article you are selling in the mind of the other man. When you do this your work is well done and you need not worry about the results. You may not get the order then and there, but if you have succeeded in establishing in the mind of the prospect the dollar-for-dollar value of your product so that he believes it is the best for the money, the order will inevitably follow.

In selling automobiles this naturally presupposes two things—fiirst, that the salesman has convinced himself of the value of his car by the analysis of its construction, by careful comparison, by accurate knowledge; second, that he knows his car through and through. There are many other methods of salesmanship, but this sort of selling achieves large results and builds permanent business.

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Solutions of The Used Car Problem

In Competition for Motor World's Cash Premiums of $50, $25, $15 and $10 for the Best Four Articles Dealing With the Subject.

By J. W. FRASER, Cleveland, O.

How to handle the used car problem is, in my estimation, almost as difficult as the tariff. But it seems sooner or later, it will receive very serious thought by the students of automobile disposal, and eventually will be to a certain extent brought to a more satisfactory basis than at present. In my opinion the methods used by dealers in automobiles to take used cars in trade are almost suicidal. One dealer offers a certain amount in trade on a new car, the next offers more, or less, depending on how anxious he is to dispose of his allotment, and in most cases sacrificing some or almost all of his profit, and what he has made, if any, is represented by a second-hand car which requires as much or even more salesmanship to dispose of than does a new one.

Now in order that every dealer may be on the same basis and not be placed in embarrassing positions, I am led to believe that the dealers should get together and form a company—an automobile trading company—and when a customer has a used car to trade for a new one that he be referred to this company, the head of which should be a thoroughly practical man, and well versed in all makes of cars, and also possessing the faculty of properly appraising the value of a second-hand car; if need be, he should run it and look into the condition of tires, style, paint, bearings and general condition throughout.

The appraiser of this concern should take into consideration the probable figure at which the car can be disposed of and from that sum deduct a certain amount and arrive at the proper amount to be allowed by the dealer in new cars, and also, if need be, give the customer a check payable to the order of a dealer for a new car, or at least a statement in writing that can be used as a basis of allowance in a trade. This credit slip would be given as part payment for a new car; then all the dealer will have to do will be to turn in the old car to the automobile dealers trading company to be reimbursed for it and deliver his new car, obtaining a price that is legitimate. At the end of the business year the profits of the second-hand company can be divided pro rata.

This method would tend not only to put all dealers on the same footing but would eliminate the cut-throat practices now employed, and simply mean that if a certain dealer is compelled to dispose of a certain percentage of his allotment at a reduced figure, he must be frank and honest about it and not try to sear his conscience by imagining he is keeping up his price by making an exorbitant allowance for the old car, whereas he really is foisting on himself a very poor bargain.

The public at present has a very good idea as to what a second-hand car can be bought for, and naturally the dealer who makes the most extravagant allowance is the one who usually gets the business. As most of the standard cars now built are a good buy at the figure set upon them, this suggested solution of the problem would also tend to check the practice of the car owner making himself the hawker of a "lemon" in the shape of a used automobile; in the end it also would increase his self respect and keep him out of the Annanias club, as most men are prone to boast of their ability as traders and in so doing have a tendency to boost the price obtained by them for their old cars or minimize the price obtained from the dealer, thereby again putting the dealer in an embarrassing position with the next prospective customer, who probably knows exactly what cash consideration on his old car Mr. B gave and obtained for his latest acquisition.

By W. F. O'BRIEN, Chicago, Ill.

In seeking to solve the used car problem, why not follow the custom employed in disposing of the automobile's forefather—the horse.

A big price is paid for a good horse, but after its usefulness has been worked out of it, it is sent to the "killers" and killed, and parts that are still useful to this generation are put back on the market in different ways, as, for instance, the hide for leather, bones for fertilizer, etc.

The old automobile should be headed toward the "killer." The main reason they are not headed that way is because the dealers are too anxious to make a big sales showing, and therefore allow too much for the old cars. As he can not afford to let the "killer" have the cars at a price, the market consequently is flooded.

The "killer" referred to is the man who buys the old car and dismantles it. The engine goes, perhaps, to the man building a boat, the farmer for a wood cutting machine, feed cutter, etc., and not a few to the would-be mechanic and aviator, to rebuild their old cars, their planes, air-wagons, ice bobs or other freaks, that find their way sooner or later to the smelter in the whole, not even dismantled. The tires, steering gears, radiators, axles, transmission, etc., not of a too antique design, generally find a ready sale to the unfortunate individual who has collided with a tree or other obstacle with his new, or nearly new, car, and wants it repaired cheaper than it could be done by a machine shop furnishing new parts. By the time this is done the brass, copper, aluminum, odds and ends have gone to the smelter and the old car or cars are completely off the market.

Let the dealers strive to sell to parties who junk the old car and not to the ones who patch it up and "sting" some one, which only makes one more hard customer who takes long talking to convince that a good car is like a good horse, and a poor one like a balky nag.

This Competition Closes Monday, December 16th. No "Solution" Received After That Date Will Be Published or Considered.

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EDUCATING PUBLIC THROUGH THE SHOW WINDOW

Silent Lecturer and Moving Pictures Instruct Those Who Pass Establishments of Automobile Dealer and Tire Manufacturer in New York—Hundreds Daily Familiarized With Shop Operations.



NEW YORK CHALMERS SALESROOM SHOWING HOW THE FACTORY WAS BROUGHT TO BROADWAY

Showing visitors through the factory is a pleasure for the up-to-date manufacturer who is anxious to put his product on an advanced footing with the public; the visit to the factory not only affords the manufacturer an opportunity of winning the caller's esteem through courteous treatment but it presents an occasion for impressing the sightseer with the solidity, thoroughness and reliability of the company, and hence the desirability and safety in owning its product. Many factories extend a perpetual invitation to interested and uninterested persons to inspect the plant.

The Chalmers Motor Car Co. of Detroit, Mich., however, has gone this personal visit one better, as is evidenced by this company's metropolitan distributer, Carl H. Page & Co., of Broadway and West 50th street, New York City. As Page cannot take New York to the factory, he has brought the factory to New York—that is, he has brought a fairly good substitute and is daily educating Broadway in the workings of the big Chalmers plant.

The plant, although it occupies several acres in the "Automobile Capital," is, in New York, contained in one of Page's show windows, and he is getting value received for the money he has invested in window space. The factory in the window is nothing more nor less than a large paper mache picture in relief, showing the entire factory, detached structures and all, just as it is seen by a bird flying over the establishment. The windows are translucent and the throwing of an electric switch in the background gives an excellent imitation of the factory as it appears when the night force is at work. From the street the picture is seen in attractive perspective and of itself is sufficient to win attention.

But the scheme does not end here—in fact, the picture may be said to be a minor part of the plan. Between the picture and the window is an upright standard carrying a book of photographs taken in the factory, the separate pictures being mounted on linen and capable of being let fall over the top and at the back of the standard, just as maps are handled in schoolrooms. On the floor near the window are a quantity of automobile parts. The remaining figures in the scene are a pointer and a man.

The man is the teacher in the "public school." Turning the leaves of the book to a photograph of the paint shop, for instance, he points to the explanation, printed on the photograph in letters large enough to be read from the sidewalk, indicates the operations described and then, with the pointer, touches the relief picture of the paint shop at the rear of the factory prem-

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ises. The next photograph may be that of a man drilling a connecting rod big end. The explanation is indicated, the teacher pushes his pointer through the hole in a real connecting rod he has picked up from the floor and holds the part up to the photograph as nearly as possible in the same position as the rod is held by the mechanic in the picture. Next may be a man turning a camshaft or a crankshaft, and similar procedure is followed. The demonstration serves to dispel much of the mystery that shrouds the making of an automobile with a large part of the public; many operations are unfamiliar even to the owners of cars.

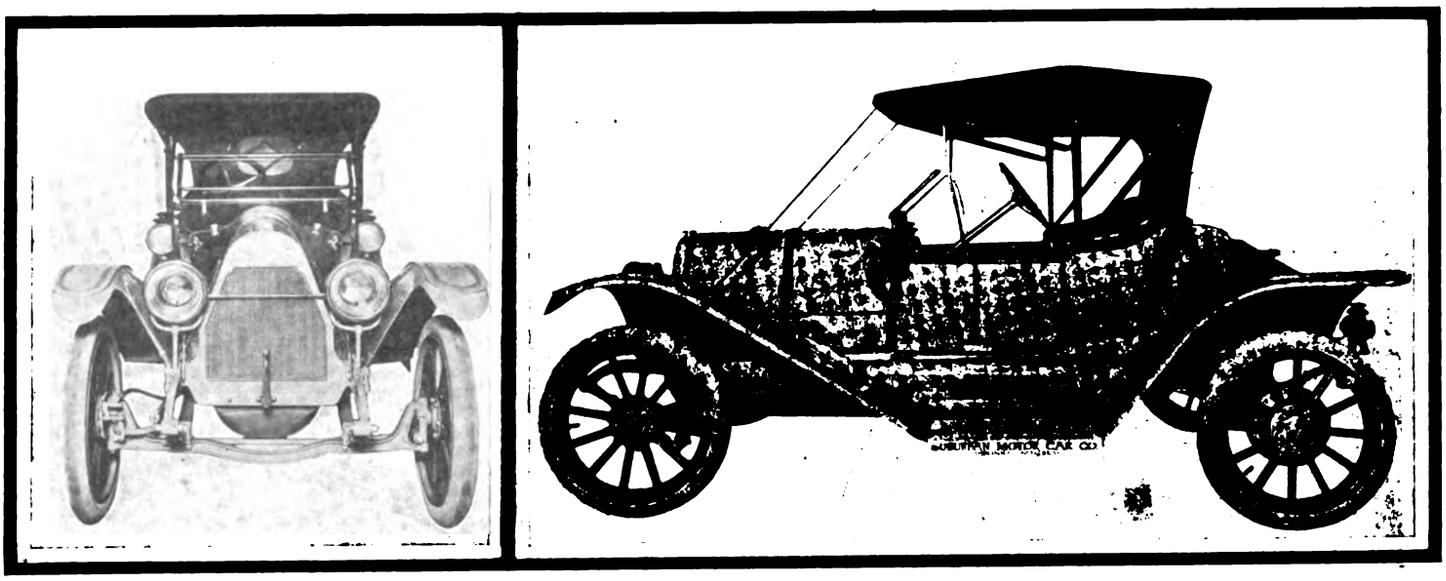
The big relief reproduction of the factory is sufficient to attract attention; but when the man is on the scene, mutely operating his pointer, spectators are never lacking. The show window is close to the 50th street downtown station of the subway, and hundreds of people pass the corner every day.

Another window display of an educational nature consists of a miniature moving picture exhibition of spectacular tests of Diamond safety treads, and is "staged" in one of the windows of the palatial store of the B. F. Goodrich Co. of New York at 1780 Broadway. At the small end of a long, black, tapering box is a screen on which the pictures are projected; the other end, which is open, faces the window. The pictures, which are clear and sharp, show the marked difference in the behavior of two cars on a wet, slippery asphalt pavement, one machine fitted with smooth tires and the other with the safety treads. Sharp turns are shown, in which the smooth-tired car skids around and faces the way it came, while the safety treads hold true to their course; and braking tests, in which the same difference in adhesion to the slippery road surface is exhibited. The "movies" rarely fail to attract a crowd.

INITIAL PALMER PRODUCT A WELL-STANDARDIZED CAR

It Is a Roadster Model With Foreign Lines But Distinctly American Parts—Production To Be Pushed.

The initial product of the Palmer Motor Car Co. of Ecorse, Mich., which, as was told last week in Motor World, was evolved from the Suburban Motor Car Co., proves to be an unusual appearing roadster model which suggests not a little foreign practice in its lines. Despite the appearance of the car, however, apparent principally in the shape of the radiator and hood, its specifications reveal nothing that is radical in its make-up. In fact, all of the various components are of standard construction and the list reveals the names of only parts makers of recognized merit in the trade. Already a factory site has been obtained and preparations are being made actively to push production.



FRONT AND SIDE VIEWS OF PALMER ROADSTER, SHOWING DISTINCTIVE SHAPE OF HOOD AND RADIATOR

In the choice of a motor, conservatism is apparent in the dimensions of the cylinders adopted, a middle ground rather than an extreme in the matter of stroke or bore ratio being one of its features. It bears the well-known Hazard name-plate and the bore and stroke are 4 inches and 4½ inches, respectively, permitting a nominal rating of 30 horsepower. Motor auxiliaries, no less than the motor itself, have been the subject of much deliberation and careful choice, as is revealed by the fact that "mixture" is supplied by a Stromberg carburetter and sparked by a Bosch high tension magneto.

From the engine, power is transmitted to the road wheels through the intermediary of a multiple disc clutch operating in an oil bath, which type was chosen by reason of its universally "sweet" action and the usual absence of slipping and grabbing. The gearset is the product of the Brown-Lipe company and provides three forward speeds and reverse, obtained in the orthodox manner by means of a selectively operated hand lever. Both the front axle, which is of substantial construction and I-beam in section, and the rear axle, which is of the floating type, are produced by the McCue Co. of Buffalo, N. Y., in its usually thorough and workmanlike manner. The wheelbase of the standard chassis is 114 inches, with semi-elliptic springs both front and rear; tires are 34 x 3½ inches.

The roadster model which now is being produced is of the generally accepted pattern in which the steering column is located at the right side. The upholstering is deep and the seat is proportioned to permit both occupants plenty of elbow and leg room. Lending a rakish appearance suggestive of speed, the engine bonnet is rather longer than is usual, the effect being heightened by the low flush sides of the body and the location of a gasolene tank of generous capacity at the back of the seats. Behind the gasolene tank, which is rectangular in section, a small trunk, tapered to conform to the lines, permits the storage of tools and spare parts and at the same time adds a finishing touch that fills out the otherwise empty space and gives an unmistakable appearance of completeness.

The Right Way to Wash Radiators.

Running a car for a considerable distance over very muddy roads is apt to result in the clogging up of some of the radiator spaces with mud. This, of course, may easily be washed out with a hose, but the water should be applied from the rear so that the magneto will not be wetted.

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REILLY EXPRESSES HIS VIEWS ON OVERCHARGING

He and the Sales Manager Argue the Pros and Cons of the Parts Price and Repairing Questions—They Haven't Yet Discovered Why Renewals, When Put Into a Car, Become So Highly Valuable.

The Reilly family had consented to run into the city and help the Sales Manager's family dispose of an abnormally large Thanksgiving turkey, only on condition that the Sales Manager's household forthwith migrate to Reilly's town for a weekend, while Reilly remained at the factory for a salesmen's meeting, and on the following



BEFORE THE SALES MANAGER COULD CLIMB OVER REILLY WAS AT WORK

Sunday help wreck the pompous post-Thanksgiving bird that Grandfather Reilly had sent from the country; which accounts for the appearance of the Sales Manager and his soon-to-be-host speeding over a country road in Reilly's car on Saturday afternoon, the cares of business and the factory left as far behind as was possible with this pair.

Reilly's Boyishness Asserts Itself.

For the first few miles out of town neither said much. The silence might have been unbroken for the thirty-or-so miles had not Reilly, in whom boyish traits had not entirely eliminated themselves, spied a walnut tree in a fence corner, which is sufficient to stop the progress of any youth. The Sales Manager looked in astonishment as Reilly closed the throttle and, with a "Come on, Jim!" jumped out of the car and began to climb the fence.

"What for? Where are you going?" the Sales Manager finally managed to ask.

"Walnuts," was the only comment.

Sitting in the car proved to be a solitary occupation, so the Sales Manager finally decided to emulate his companion and climbed the board fence, but by this time Reilly was busily at work, seated on a boulder, a cobblestone in hand as a hammer and a growing pile of nut shells giving testimony to his industry. It didn't take the city-bred man long to follow suit, once he discovered that the shaggy-barked tree bore the nuts for which he paid good prices at street corners.

Parts Catalogue That Needed Revision.

Silence again reigned, except for the clacking cobblestones, until the lightning-like brain of the dealer made a faraway jump to a very foreign subject and he asked: "When are you going to revise that parts catalogue?"

"Coming through the print shop now; why?" the Sales Manager managed to explain between bites.

"Nothing; only I think you need it. I suppose we'll get better prices on some of the parts, won't we?"

"Yes," admitted the Sales Manager. "Some of them have been cut down. But why? Are you starting to kick, too?"

"Well," was Reilly's admission, "some of my customers have been kicking, and if I think they're right why shouldn't I complain a little? If you keep on with that catalogue you'll be as bad as the factory that makes Henry's cars; he's only a few doors from me, you know, and he's lost a lot of trade because his customers thought they were being 'stung' on repairs—and Henry did sting some of them, too."

"How?"

High Prices Charged for Repair Parts.

"The usual way," answered the dealer. "Wants to get rich too quick. He's just like a lot more. They think because they're repairing automobiles that the stuff they put into them is worth from two to ten times as much as it would be if it were put into a wagon. Henry, to start with, had a parts catalogue that was a disgrace; but the factory people insisted that they knew what they were doing and put prices on parts that were away out of decent proportions. They charged about twenty times the first cost of a piece of steel even when all that was done to the piece in the factory was to make an eye in one end and a thread on the other. I can't see the justice of it, myself.

"Of course, Henry was charged for the part at the regular price, and he had to make his profit on it, even if his trade did kick. It was that way on all the parts. One of his customers walked in one day with a parts catalogue in his hand; he had added up the prices of all the parts that go into a car and found that they cost nearly three times the price of the completed car itself. Henry couldn't explain it; and I don't believe anyone else can."

The Sales Manager's Explanation.

"There are a lot of things you don't take into consideration, Reilly," interrupted the Sales Manager. "We have to charge more for parts than we would if we had a big factory turning out nothing but a few different pieces; it costs us more. We have to keep a stock on hand, and considering all the changes made in the cars, it is some stock. Also, for the earliest models, of which but a few were made, the parts call is not heavy, and sometimes to supply an

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order we have to put one mechanic on the job and let him make it; that costs money."

"You may be right," admitted the dealer, as he almost missed his thumb with the cobblestone, "but it surely does make a customer sore to pay the prices some of them have to pay. On Henry's line of cars he charged a dollar for one of those buttons that goes on the thumb latch in the end of the brake lever. According to the car owner's viewpoint, those things ought not to be worth more than a dollar a quart.

Bleeding Trade Bred Discontent.

"But to get away from this parts proposition, a lot of his trade was justified in feeling they had been bled when they were called upon to pay bills. Some of the items were cotter pins, the size that costs 10 or 15 cents a pound; Henry charged them all up a cent apiece, which was a profit of such a big per cent. that no one would believe it if you told them, so I never took the time to figure it out. I got into a discussion with him about it one day and he said a cotter pin installed in a car was worth more because of the labor that had been put on it. I asked him if he didn't also put in a labor charge on the car and if the customer was not therefore called upon to pay twice for the labor. He shrugged his shoulders at that, but kept right on charging up cotter pins at one cent per.

"Another thing for which he offered the same excuse and which made bad feeling was the prices he asked for common nuts and bolts that were used in repair work. Mind you, they were not special nuts and bolts that he got from the factory, but the common, ordinary kind that you buy in any hardware store in a cardboard box. These were worth ten cents by the time the Henry workmen got them into a car. The transformation in the value of little things like that was wonderful when they passed through the Henry repair shop; it was a regular gold-plating establishment. Things went in worth less than a cent and were worth ten when they came out. If he only could create a demand for something and put it through his shop he would get rich in a month. The trouble is that there is a demand for his goods, but the people who own cars he has sold are wise to values and don't enjoy being squeezed: quite a few have quit him and gone to a shop that does nothing but repairing and does it on an impartial and businesslike basis.

Consistency Which Reilly Emulates.

"Down where those car owners now get their work done the boss has some sense of consistency and charges what things are worth. He has some system in his shop, too, and I may add that I try to run mine the same way; in fact, I have stolen one or two ideas from him. This overcharging business is about played out.

Explanations That Are Not Impressive.

"I know, Reilly," protested the Sales Manager, "but you must take into consideration the overhead and extra expense that is charged to these parts. If a factory did nothing but turn out thumb latch knobs it probably could make them for a few cents each; big production makes little costs and"——

"Sure! I know all about that," was Reilly's response. "You chaps in the factories are full of figures and explanations, but you don't often come in contact with the car owners who are charged for even nuts and bolts about ten times what they're worth. If you met more of them and heard them holler, you might change your views and, maybe, your prices. Hardware stores have to carry stocks of bolts and nuts and other things, and yet they don't squeeze the public, and I can't see yet why so many of these automobile prices should possess mushroom tendencies.

"In the early days the repairman considered that any owner he got hold of was legitimate prey, and owners haven't yet gotten over the idea that a repair shop is a thing to be avoided, because a lot of them are just that sort.

Lax Methods as a Cause of Overcharge.

"Some overcharging is done through the ignorance of the boss. He doesn't intend to squeeze anybody, but is squeezed by his help. He hasn't any means of knowing whether the men loaf on the job. He sends a car into the repair shop to have certain work done on it and bye and bye it comes down; the workmen say they have put in so much time on it and the owner is charged up with that much labor. He kicks, but the proprietor says the men really worked hard on that car all the time—and there you are!

"What's the solution?" asked the assistant walnut cracker.

"A little card system would work wonders," replied Reilly, "provided the boss knew anything at all about the time it takes to do various jobs. He should have some sort of a car record showing just what was done on the car, who did it, how long it took to do each separate job, and if the time was overlong, why. He also ought to have a time card on which the workman should put down what he has been doing all day. This is a big help toward weeding out poor and dishonest workmen. I have gotten rid of the undesirables in my shop; a good card system—and an honest foreman—did it. Also, the foreman himself inspects every job before it leaves the shop, and if anything has not been done right we make it right, and we don't charge the car owner for the extra labor, either. The man who did the poor work is given to understand that he'll be charged for it, if ever he does it again and, believe me, that policy always has worked wonders.

Playing "Safe" That Does Not Pay.

"One day an owner went over to Henry's shop to get a new rear axle housing. When Henry sent the bill he charged $140 for the metal! Just imagine that—$140 for a rear axle housing! He could have had one made to order for a lot less than that. The owner put up a howl, and Henry right there confessed his shortcomings. He said he couldn't find the price in the catalogue, had tried to get a price from the factory but couldn't, and so had made a charge that would be on the safe side. He tried to soften the owner's wrath with the explanation that when he got the right price, and if it proved to be lower than the price charged, he was going to remit the difference to the owner."

"Did he get away with it?" interrupted the Sales Manager in astonishment.

"Just imagine that kind of a repairman giving up money, once he got it! You needn't worry; he didn't get it. The car owner himself wrote to the factory and got the price, and Henry came near losing his agency. It took a lot of explaining and promising of good behavior on his part to keep his line. At that, I don't blame him so much, as he was doing what the factory had taught him in an indirect way. I honestly believe that some factories, his included, make up their parts catalogue by guesswork and make charges that they know are 'safe.'

A Race With an Irate Farmer.

"Speaking of a satisfied public," said the Sales Manager, as he dropped his cobblestone and began to climb the fence, "what do you make of the dissatisfied look on that individual coming across the hayfield?"

Reilly looked, and the one look was enough. The farmer who owned the walnut tree appeared sufficiently formidable, but his bulldog was more than formidable and Reilly beat the Sales Manager to the car. As the dealer threw in the clutch the canine bounded over the fence and from across the field came angry protests in which the two motorists distinguished "Robber" and "Thieves," and an angry fist made gestures in the air.

"Talking of robber repairmen," said the Sales Manager, "who's a robber now?"

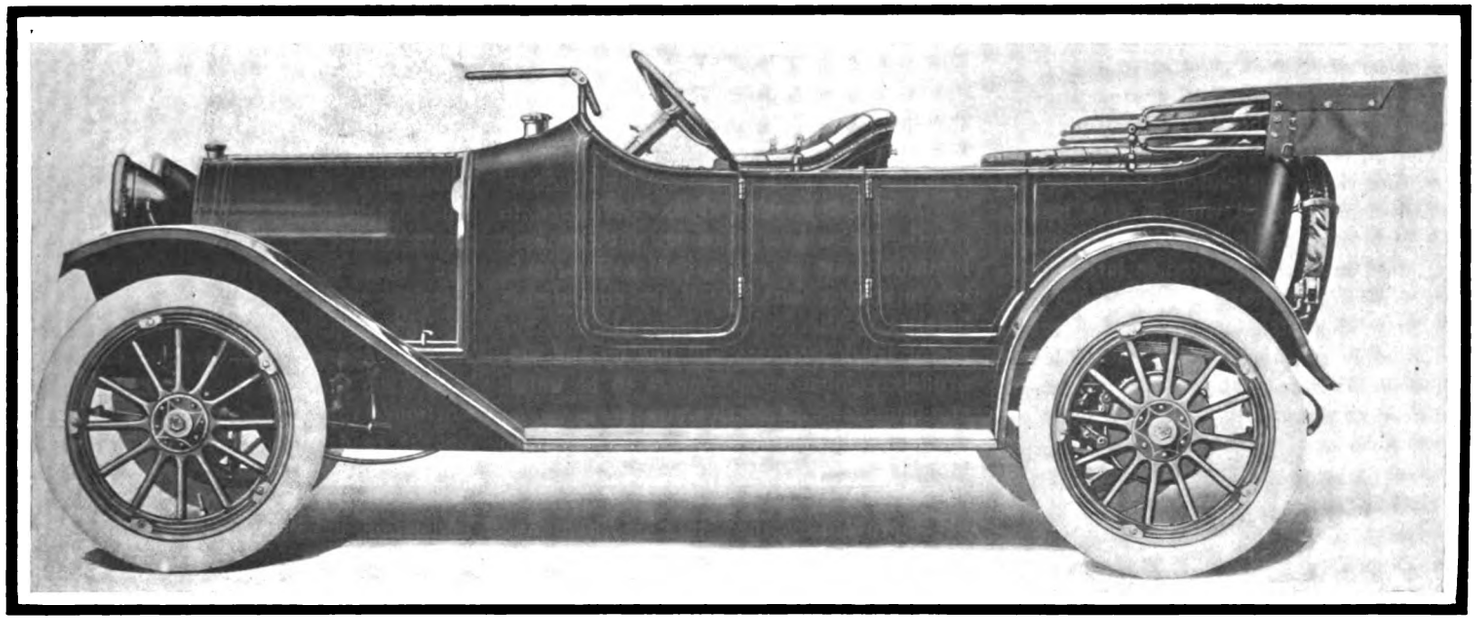
"I didn't think he'd care; most farmers don't. Anyway, you ate as many as I did," retorted Reilly.

"Yes," rejoined his companion, "but you tempted me."

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NEW PAIGE "FOUR" A CAR OF UNUSUAL VALUE

Unit Power Plant With "Silent" Chain Camshaft Drive, Dash Fuel Tank and Complete Dynamo Electric Lighting and Starting System Among More Prominent Characteristics—Lists at Less Than $1300.



LATEST ADDITION TO THE PAIGE LINE—A FIVE-PASSENGER, FOUR-CYLINDER TOURING CAR AT $1,275

In adding to its line a brand new model which lists at the low price of $1,275, despite the fact that it is fully equipped even to an electric lighting and engine starting system and numbers among its more prominent features left drive with center control, 4 x 5 unit power plant with "silent" chain camshaft drive, dash gasolene tank, 116-inch wheelbase and 10-inch upholstery, the Paige-Detroit Motor Car Co. of Detroit, Mich., has sprung a surprise that is real and must be reckoned with. Nothing has been skimped in the car and every little detail calculated to increase efficiency and comfort has been worked out in the way that helped make popular the smaller Paige car, which is continued practically unaltered. Throughout the design of the car there is apparent a studied attempt to obtain better construction and to eliminate the inefficiencies and inaccuracies which experience has pointed out.

The cylinders, for instance, are of the L-head type, though the intake and exhaust manifolds are cast separately and afterward bolted in place in order to permit greater cooling surface for the valves. Also, they are so arranged that they do not interfere with the valve mechanism which is enclosed by means of light removable covers. The intake manifold, in particular, is very short, the reason for the construction being to reduce the possibility of gas condensation and consequent "loading up." Both intake and exhaust ports are extra large to facilitate the ingress and exit of gas and no little of the actual power developed in excess of the rated power is laid to the fact that the valves are large—two inches in diameter.

By way of reducing wear and vibration, the pistons are made extra long and light and are carefully balanced. Another excellent feature is that the cylinders are offset, which, in combination with 10½-inch connecting rods, makes for straighter thrust on the crankshaft and thus reduces side wear on the cylinders The crankshaft is drop-forged of .35-.40 open hearth carbon steel and is of the three-bearing type with the flywheel flange formed integral; the three bearings are, respectively, 3, 2½ and 4 inches in length. The camshaft also is a drop-forging with all the cams, as well as an eccentric to operate the oil pump, formed integral. It is supported in three die-cast bearings. In the manufacture of the camshaft great pride is taken in the fact that all the cams are accurately ground within very fine limits, thus effectually providing against the possibility of valves opening slightly "out of cycle" and thereby causing irregular running and multifarious other troubles. The camshaft on the left side of the motor and the water pump opposite both are driven by means of link belt "silent" chains.

The lubrication system is what is known as the constant level pump-over type, the oil being pumped into pockets over the main bearings through suitably placed ducts, whence it drops into the bearings and eventually into the crankcase reservoir. Beneath each connecting rod big end bearing there are small troughs into which scoops dip, thus lubricating the connecting rod bearings and at the same time splashing the oil over the cylinder walls and auxiliary bearings. The oil level in the crankcase is sufficiently deep to ensure that the "silent" chains will run through it at all times, regardless of the angle at which the car may be tilted in hilly country.

In the cooling system, the water pump, which is of the centrifugal type, has been so arranged that in the event of accident the water will circulate by thermo-siphonic action. Radiation is assisted by means of an adjustable belt-driven and ball bearing mounted fan. Ignition is effected by means of a high tension Bosch magneto located to be driven from the water pump shaft, where it is instantly accessible for inspection or

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to make such slight adjustments as may become necessary.

The Gray & Davis electric lighting and engine starting system, which forms part of the regular equipment, is mounted in the orthodox manner. Which is to say, the generator is mounted on an engine bracket and is driven from the pump shaft. The electric motor starter is mounted on a chassis bracket and is connected to the engine through the intermediary of gearing cut in the flywheel. Current for starting and lighting is drawn from a liberal-sized storage battery.

From the engine, power is transmitted to the road wheels through a multiple disk clutch and a three-speed selectively operated gearset. The clutch is composed of 14 disks and is fitted with 36 cork inserts in each of the driving disks. The change gear mechanism is mounted in large, high-duty Hyatt roller bearings. Shafts are tempered and heat treated, as are the gears; the case is of aluminum. Control levers are placed in the center of the footboard, the gearshift lever rising out of a small extension directly on the cover of the gear case, and the steering wheel is located at the left side.

The rear axle is of the three-quarter floating type with the orthodox bevel gear and enclosed propeller shaft, the housing serving also as a torsion member; radial action and driving strain are taken by a pair of radius rods substantially supported on the chassis. Two sets of brakes are provided, the service set being internal expanding, connected to the usual pedal, and the emergency set being external contracting, connected to a hand lever. The wheelbase is 116 inches and the wheels are shod with 34 x 4-inch tires mounted on demountable rims.

Equipment of the new Paige, which is styled model 36, includes, in addition to the usual complement of horn, tools, jack, tire repair kit, pump and demountable rims, a complete Gray & Davis electric lighting and engine starting system, silk mohair top with side curtains and envelope, ventilating windshield, Stewart rotating dial speedometer, adjustable foot rest, tire irons, license brackets and a complete assortment of electric lights.

Dealers' Association Grows Ambitious.

Having existed chiefly for the purpose of conducting an annual show, the Kansas City Motor Car Dealers' Association has awakened to a sense of greater and continuous usefulness. To carry out its plans in that direction, it has engaged E. E. Peake, a former insurance man, who has been appointed permanent secretary and who has established headquarters at 219 Commerce building, in Kansas City.

NEW YORK STATE MAY LIMIT WEIGHT OF TRUCK AND LOAD

Highway Commissioner Takes the Initiative and Outlines Law That May Be Introduced—Would Bar Some Vehicles.

While it may or may not be without good and sufficient reason—only the sequence of future events can make this clear—it is certain that motor truck manufacturers and dealers are considerably wrought up over the fact that the New York State Highway Commission is engaged in framing legislation having for its object the limitation of the weights of motor trucks permitted to use the highways. Moreover, the proposed limitations are so radical and so far-reaching in their effects that if the commission persists in the course it has laid out, the motor truck interests will line up and vigorously combat what appears to be unfair and oppressive restrictive measures.

Briefly, the idea of the commission is to bar from "any State or State and county highway which has been or may hereafter be improved by the State or State and county, any vehicle the weight of which shall exceed, in combined weight of load and vehicle, as related to the width of tire, the weight per width as given in the following table"—the table specifying that the maximum weight on a single axle shall be, for 1½-inch tires, 1,200 pounds; for 2-inch tires, 1,600 pounds; for 2½-inch tires, 2,000 pounds; for 3-inch tires, 2,400 pounds; for 4-inch tires, 4,800 pounds; for 5-inch tires, 5,600 pounds; for 8-inch tires, 6,400 pounds; for 9-inch tires, 7,200 pounds, and for 10-inch tires, 8,000 pounds. In other words, four tons is the maximum weight permissible, under the proposed measure, on any one axle, except on State or county roads "built of brick laid upon concrete base" or "highways having a roadbed of concrete six inches or more in thickness." These exceptions, of course, are of extremely limited value, because of the comparative scarcity of roads of the excepted kinds.

A second suggested method of limiting the weights of motor vehicles consists of specifying the total combined weight of vehicle and load to be allowed to use the highways. This works out to exactly the same maximum limit, as the greatest weight specified is 16,000 pounds on 10-inch tires. The complete list is as follows: On 1-inch tires, 1,600 pounds; on 2-inch tires, 3,200 pounds; on 3-inch tires, 4,800 pounds; on 4-inch tires, 6,400 pounds; on 5-inch tires, 8,000 pounds; on 6-inch tires, 9,600 pounds; on 7-inch tires, 11,200 pounds; on 8-inch tires, 12,800 pounds; on 9-inch tires, 14,400 pounds, and on 10-inch tires 16,000 pounds.

As a rule, large motor trucks are of about the same weight when empty, as their maximum rated loads; in some cases the truck weighs considerably more than its load. Moreover, in many trucks the weight on the rear axle is very much in excess of the front axle weight load. Under the provision limiting the load on a single axle to 8,000 pounds a four-ton truck would be an impossibility unless the weights were exactly equally distributed on the axles and the truck weighed no more than its load—conditions that would put all the four-ton trucks now built off the roads.

The "road experts" who are credited with instigating the proposed measures are said to have been prompted by the idea that heavy trucks are destructive to the roads and that by arbitrarily limiting their weights with loads the highways will be better preserved. Actual experience in the operation of trucks has shown that when the tires used are properly proportioned to the loads they carry the effect on the road surfaces is good, rather than otherwise, while horse-drawn vehicles, which are entirely ignored in the suggested legislation, undoubtedly cut up the surfaces with their steel tires, to say nothing of the chopping effect of the steel shoes of the horses. It is true that motor trucks when run at excessive speeds are injurious to roads; but this phase has been given no consideration, apparently.

The Highway Commission of New York State is not alone in this matter; similar movements are afoot in New Jersey, Massachusetts and Pennsylvania, and in all the States concerned the dealers and manufacturers of motor trucks are preparing to oppose the passage of any such measures, should they come before the respective legislatures. The action of the New York State commission still is uncertain—that is to say, it has not yet been decided to endeavor to have the next highway law amended at the next legislative session; but it is evident from the detailed weight limit lists that have been compiled that, in the vernacular, there is "something doing," and the motor truck people are preparing to do their utmost to block the passage of unfair restrictions.

San Francisco Votes Against a Show.

San Francisco will have no automobile exhibition during the coming show season, the movement to hold one having been voted down by the members of the San Francisco Automobile Dealers' Association. Those who so voted argued that, as practically all dealers have had their new models on display for some time, little or no benefit would accrue from a show.

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PROFIT IN DOVETAILING SEVERAL BUSINESSES

Long Island Dealer-Garagemen Solves a Problem of Real Concern to Many Others Located in Small Towns—Finds Plumbing Work and Sale of Sporting Goods Fit Well With Garaging—Maintains Well Equipped Shop.

Doubtless the operation of a garage business in a comparatively small town, unless one should just happen to "strike it right," as the saying goes, hardly can be construed as a means of getting rich quick. In nine out of ten cases, depending upon circumstances and conditions, the effort to make both ends meet and leave a balance on the credit side of the ledger, requires head work on the part of the proprietor or manager.

Combining Non-Conflicting Businesses.

But while the possibilities of making the garage pay big dividends, even when each branch of the business that can be made to help swell the profits is worked to the fullest advantage, may be slight, just a little more head work in the direction of determining a non-conflicting business which can be dovetailed and conducted with the sale, repair or storage of motor cars, and which can be worked to the best of advantage at times when the garage and selling ends of the motor car business are slack, generally will be found profitable. Such, at least, is the experience of Thomas Blyth, who is the leading spirit in the Long Island Machine Shop and Heating Co., which operates the Amity Garage at Amityville, L. I., in conjunction with a plumbing and heating contracting business of no mean volume.

Although the contracting end of the business is pursued aggressively, no part of the automobile department—and there is no branch which is not followed, from the selling of cars to the building and rebuilding of bodies—is neglected. As for the sales end of the business, that is so small as to be hardly a factor. According to Blyth, he is located too near to the metropolis—Amityville, which has a population of 3,500, is but 32 miles from New York City—to cut a very wide swath in the selling line.

Small Profit in Car Sales Alone.

"Where a native has anything up to $1,000 to spend, as a rule I make the sale," he told the Motor World man, "but for cars of higher value they invariably go into the city. With me it works out this way: I buy a demonstrator and go hot-foot after all of the prospects whom I hear of, and by the end of the season I have disposed of five or six cars at the list price, and then sell the demonstrator as a second-hand car. When you take into account the fact that to make two or three of these sales I must needs take in exchange some dilapidated machine which has to be practically rebuilt before I can dispose of it, and that I have expended gasolene and oil as well as time and energy in order to consummate the sales, you will realize that, when all is said and done, I just about break even. But I might add that I have made five or six good customers, who also are boosters, and for this reason I continue the selling end."

Repairs and Supplies Greatest Revenue.

It is from the operation of the machine shop and the sales of accessories and supplies that Blyth draws the greater part of his revenue. The machine shop yields an estimated income of $12,000 yearly. The shop is housed in the cellar of the three-story brick building and is well lighted from two rows of windows on the sides. In the way of equipment, it is complete in every detail; three lathes of different sizes, a milling machine, grindstone and emery wheel and a small and a large drill press make up the power driven equipment of the metal working department. Power is supplied by oil engines, two of which are mounted at one end of the cellar. The smaller is used to drive the machinery at times when the repair business is not sufficiently heavy to call the larger machines into use, and to drive the electric lighting plant by means of which storage batteries are charged. The larger motor is used when the shop is rushed, and it also is called into play at such times as it is necessary to operate the compressor which stores air under pressure in a large tank for use in inflating tires. Woodworking tools in the shape of a bandsaw and a circular saw are provided to facilitate the building of bodies for commercial vehicles, while vulcanizers of various sizes provide the means of effecting tire repairs. Besides Blyth, who is a machinist of long experience and a former marine engineer, three men are constantly employed in the shop.

As previously stated, the plumbing and heating end of the business in no wise interferes with the other lines. "Jobbing," as plumbing repair work is called, is not followed for the reason that there is not enough of it to keep a union plumber on the job, so to speak, and the employment of a non-union man who would be willing to jump in and turn his hand at other work would involve trouble with the union when men were needed on the contract work, which embraces the furnishing of complete systems for plumbing, heating and ventilating in new buildings. The men for the work are hired as needed and let go when the contract is completed.

Garage's Location is Advantageous.

For reaping the benefits which accrue from transient trade, the Amity Garage is ideally situated. The Merrick road, which is the principal automobile thoroughfare on Long Island, and on which the garage is located, offers mile after mile of perfectly surfaced roadway, which serves to attract thousands of motorists past the door during the summer months, so that the sales of gasolene, oil and accessories and fittings are large. Main street, which to Amityville is all that the name implies, forms with the Merrick road the corner on which the garage is situated and leads directly into the heart of the town. The advantage of carrying a complete stock of and of amply displaying small "handy" devices where they will catch the eye of those who stop to refill their tanks, has not been lost sight of, and for this purpose a neat glass showcase is stationed at the left-hand side of the door, and is "chock full" of small accessories, while a series of shelves disposed along the wall serve for the display of larger articles, such as tire pumps, jacks, etc. The reserve stock itself is housed in a stock room of no mean proportions, and is valued by Blyth at $6 000.

Motor Boats Bring Summer Trade.

But the proximity of the garage to the two main lines of travel is not the only point in favor of its location. For about a block from the building is Great South Bay, which in the warmer months is a mecca for all sorts of motor boats, and this trade, too, is catered to. Besides the usual line of accessories which are similar to those carried for the motor car trade, special goods in the form of bilge pumps, propellors, etc., as well as a more or less complete stock of

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bronze shafting and marine hardware are on hand. Naturally, the operation of the plumbing business would necessitate the stocking of pipe fittings, and these are stored in all sizes both in black iron for gas work and in galvanized iron for water. Overhauling and repairing marine motors goes hand in hand with the motor car work which enters the shop.

Storage practically is a dead issue. Although there is sufficient room for the accommodation of 20 cars, the avearge never is more than three, for which a flat rate of $20 a month is charged. The fewness of the cars on storage is attributed to the fact that the natives—that is, the people who live in the town the year round—when they do own cars the latter are generally of the variety which can be stored anywhere, so to speak, and a barn is pressed into service for the purpose. The people who come to the town for the summer generally own estates in the environs and naturally have their private garages. These "summerers," however, are first-class customers for accessories, and they also do much in the way of swelling the receipts from the repair and vulcanizing departments.

One of the most interesting features of the Amity Garage developed when Blyth led the Motor World man to the second floor of the building. There neatly stocked on shelves which encircled the room was a complete assortment of sporting paraphernalia. Baseball bats, gloves, masks, tennis goods, boxing gloves, fishing tackle, and a world of things of like import were revealed, one after the other, as the proprietor led the way around the room.

"Does it pay to keep them?" he was asked.

"Yes, it pays and pays well, provided a little care and judgment are exercised when the goods are bought," was the reply. "You see, this is the only place in town where these goods can be bought, and consequently I have laid in a full supply."

As he spoke, he led the way past compartments full of horsewhips and harness fittings to a set of shelves loaded with cartons all bearing green labels.

"Ammunition," he remarked. "At this season a great number of city folk come down to enjoy a few days at duck shooting, and shot naturally is indispensable. We carry a full line and find it worth while."

Connected to the garage building, which is owned by the company, is a blacksmith shop, which, however, is operated as an independent business. The "smithy" pays a yearly rental for his stand, and naturally attends to all of the work in his line which comes to the garage.

Spark Plug to Increase Power.

Appreciation of the important bearing that the character of the spark has on the efficiency and economy of operation of the gasolene motor has been the motive behind many spark plug designs having for their object the production of intensely hot and vigorous sparks capable of promptly and thoroughly igniting the gas in the cylinders. While most plugs are more or less alike, in a general sort of way, even when designed especially for hot sparking, the McCormick "power plug," shown in the accompanying illustration, manufactured by the McCormick Mfg. Co., of Dayton, O., differs in several respects from what may be termed conventional design.



Briefly, the idea back of the design of the McCormick plug is to make use of the principle of the condenser, which acts as a sort of reservoir of high-tension current, receiving a charge just before the spark occurs and discharging a larger volume of current than would be possible without the condenser.

As the above illustration shows, the upper part of the central electrode and its insulation are surrounded by a steel casing within which is the condenser. Instead of a pair of points, the discharge takes place from a central cone to the edges of an annular grounded electrode formed integrally with the plug shell. It is claimed that the volume of the discharge is such that a number of simultaneous and intensely hot sparks occur, igniting the gas in the cavity of the shell above the point of discharge and causing a spurt of burning gas that greatly intensifies the effect. The intensity of the discharge is such as to burn away or dislodge accumulations of oil or carbon, which otherwise would be likely to cause short circuiting of the plug and consequent misfiring. The price of the plug is $2.

Odd Outgrowth of Negligence Suit.

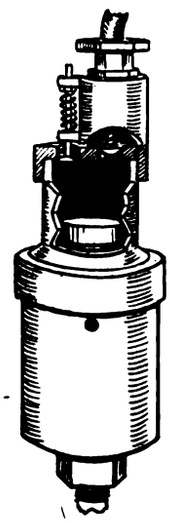
A negligence suit, which when tried in the Municipal Court in New York City a year ago resulted in a verdict of $715 against Henry Krauss, president of the Washington Bridge Auto Co., has become responsible for a legal action within that company. The original suit was brought by a man who was struck by a car and, in selecting someone to sue, he picked out Krauss instead of the corporation of which Krauss is president. Krauss, however, maintained that the corporation should have been sued, and after judgment was taken against him he sued the automobile company in the City Court to recover a total of $250, representing the judgment and what the fight had cost him. The City Court judge permitted the dispute to go to the Appellate Term of the Supreme Court for New York county, where Krauss hopes to get his money back.

Highest Court Rules on Dealers' Prices.

According to the decision of the Supreme Court of the United States, rendered on Monday last, it is unlawful discrimination to sell a commodity in general use to a dealer in one place at a lower price than to a dealer in a different place in the same State with a view of destroying or affecting competition. The decision was given in a case against the Central Lumber Co., in which the drastic law of South Dakota forbidding such practices is declared constitutional.

Pure Air Tire Pump from Cleveland.

To make the motor of a car do the work of pumping up tires, without, however, taking power through mechanical connection with any of the moving parts of the engine, is the idea back of the class of air-pumps known as "spark-plug" pumps—because they are designed to screw into the spark-plug hole. Of this type is the National pump, shown in the accompanying illustration, made by the National Motor Supply Co., of Cleveland, O.; it pumps only pure air into the tire, there being no outlet from the motor cylinder to the discharge end of the pump.



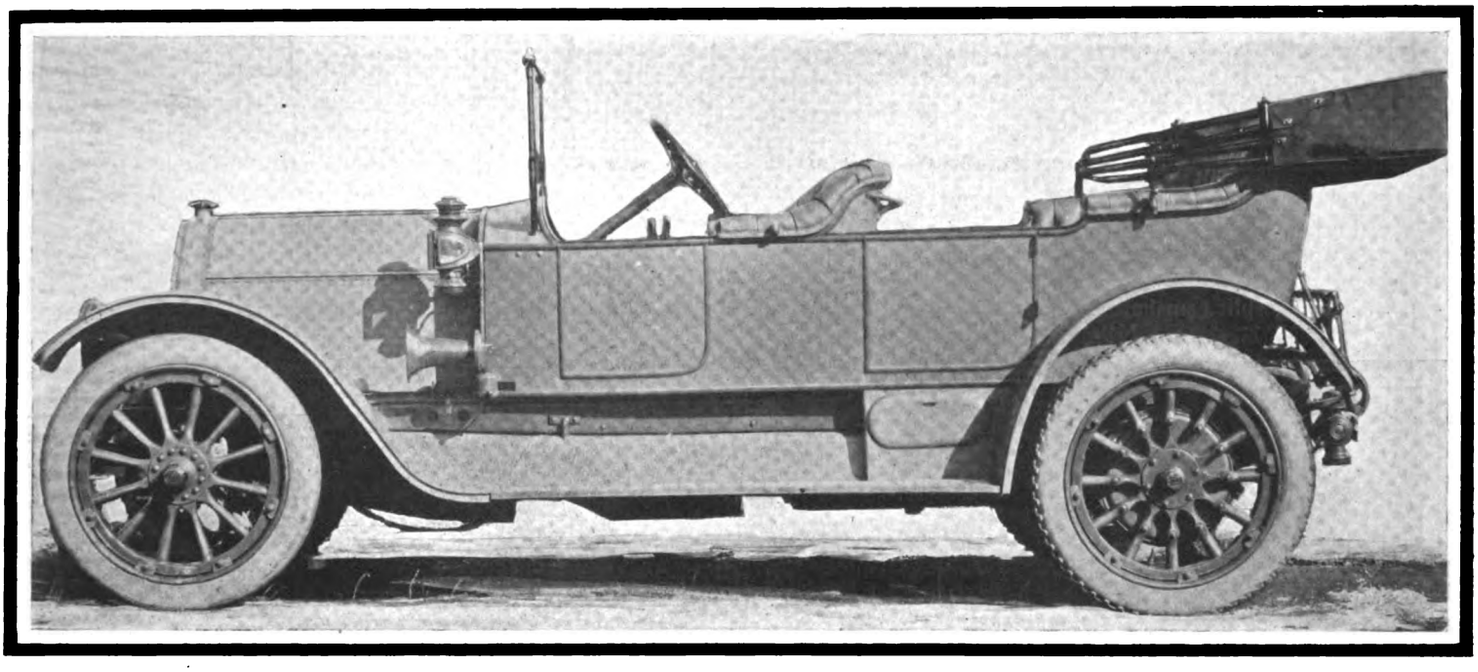
The pump is actuated by the cylinder compression, which forces a piston upward; the upper end of the piston compresses the air above it into a separate discharge chamber, where it is trapped by a check valve and passes on to the line pipe; this arrangement is clearly shown in the illustration, which also makes plain the arrangement of the air inlet valve beside the discharge chamber.

The piston is accurately finished and has metallic rings that are fitted with extreme care to avoid air leakage. The pump works noiselessly, as there are no loose parts to rattle and the piston is cushioned by air at each end of its stroke. With the pump is furnished a 12-foot length of fabric covered hose and a pressure gauge to show when the proper degree of inflation has been reached. The weight of the outfit is five pounds, so that it readily can be carried in the tool box of any automobile, and the price complete is $15.

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FIAT LAUNCHES POWERFUL FOUR-CYLINDER MODEL

Distinctive Long-Stroke Block Motor Retained Though Its Dimensions Are Unusual—Complete Electric Lighting System and Full Equipment on All Cars for First Time—Other Models Unchanged.



LATEST FIAT MODEL WHICH MOUNTS A FOUR-CYLINDER MOTOR RATED AT 55 HORSEPOWER

Having virtually set the style in long-stroke block cast motors, the Fiat company of Poughkeepsie, N. Y., which is practically the American factory branch of the parent Fabrica Italiana Automobili Torino, with headquarters in Turin, Italy, has further perpetuated it by adding another four-cylinder model to its line. Also, the new car, which is rated at 55 horsepower and therefore is one of the most powerful stock "fours" on the American market, is listed with full equipment, as is the older "four" and the "six" for the first time, thus marking a significant change from previous Fiat policy.

Indicating that the first Fiat models to come from the American plant were very nearly all that could be desired from the purchaser's point of view and from the point of view of the experienced Fiat engineers, the present productions virtually are counterparts of their predecessors; there have been no radical changes in design or construction, and the few minor changes that have been made scarcely are worthy of mention. The new "four" is exactly like the older models with but one exception—it is fitted with a compression releasing device. Engine starters are used on none of the cars, though a Gray & Davis electric lighting system is regular equipment on all.

In dimensioning the cylinders of the new car, which is styled model 55, the others being model 54 for the 35-horsepower "four" and model 56 for the 50-horsepower "six," the manufacturers have adopted figures which leave little doubt regarding the applicability of the designation long-stroke; the bore and stroke are 130 and 170 m.m., respectively, or 5⅛ x 6¾ inches. The dimensions of the other two models are the same and remain unchanged—namely, 110 x 150 m.m., which is equal to 4⅜ x 6 inches. As the three motors are identical except for a difference in the size of parts commensurate with power, a description of one will suffice for all.

All three are distinctive by reason of their clean-cut appearance and the harmonious disposition of such necessary auxiliaries as magneto and carburetter and water pump. The magneto and water pump are driven from opposite ends of a transverse shaft at the front of the crankcase, the shaft being driven by spiral gearing from the timing gear train. The location of the valves all on the same side permits their easy enclosure by means of a single plate and also facilitates the disposition of intake and exhaust manifolds. Both are cast integral and are completely water jacketed. The aluminum crankcase is cast in halves, the upper half supporting all bearings and having the motor supporting arms cast integral with it, and the lower serving the single purpose of an oil reservoir.

By way of ensuring positive and perfect lubrication, all splash is eliminated, and instead of relying upon the oil thrown over the bearings, each is fed under pressure from a centralized oil pump. The crankshaft is hollow, with suitable holes leading to the main bearings, and from here the oil is pumped up to the wrist pins through tubes, whence it finds its way to the cylinder walls through ducts in the pins. Baffle plates effectually prevent oil contained in the crankcase reservoir being splashed up to the cylinders. One of the individualities of the motor construction which throws light upon the thoroughness of design is that the valves are composed of no less than three alloys; the stems are carbon steel, to resist wear; the heads are nickel steel, to resist warping; and the surfaces are cast iron to ensure perfect contact and reduce the tendency toward pitting. The limit of tolerance in valve mechanism parts is small.

Another excellent feature of design which

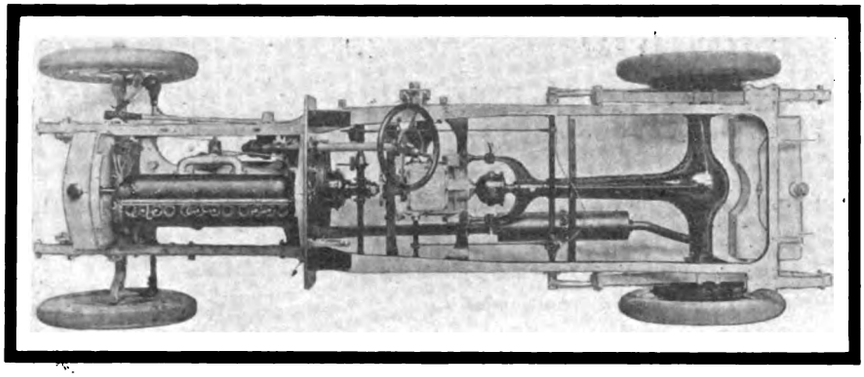
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is common to all is that the single camshaft is equipped with separately cast and mounted cams, each pair, intake and exhause, being drop-forged integral, machined and afterward mounted. In this way, the necessity for using split camshaft bearings, considered undesirable by many, is avoided. In the new model 55, which is fitted with a compression release, the exhaust cams are made double length and are so arranged that when the whole camshaft is moved longitudinally, auxiliary cams raise the exhaust valves partly off their seats. In order to obtain this feature and at the same time retain positive drive to the camshaft, the forward end carries a two-arm yoke with an eyehole in each arm fitting over a short stud in the gear wheel, so that, as the shaft is moved endwise, the wheel remains stationary.

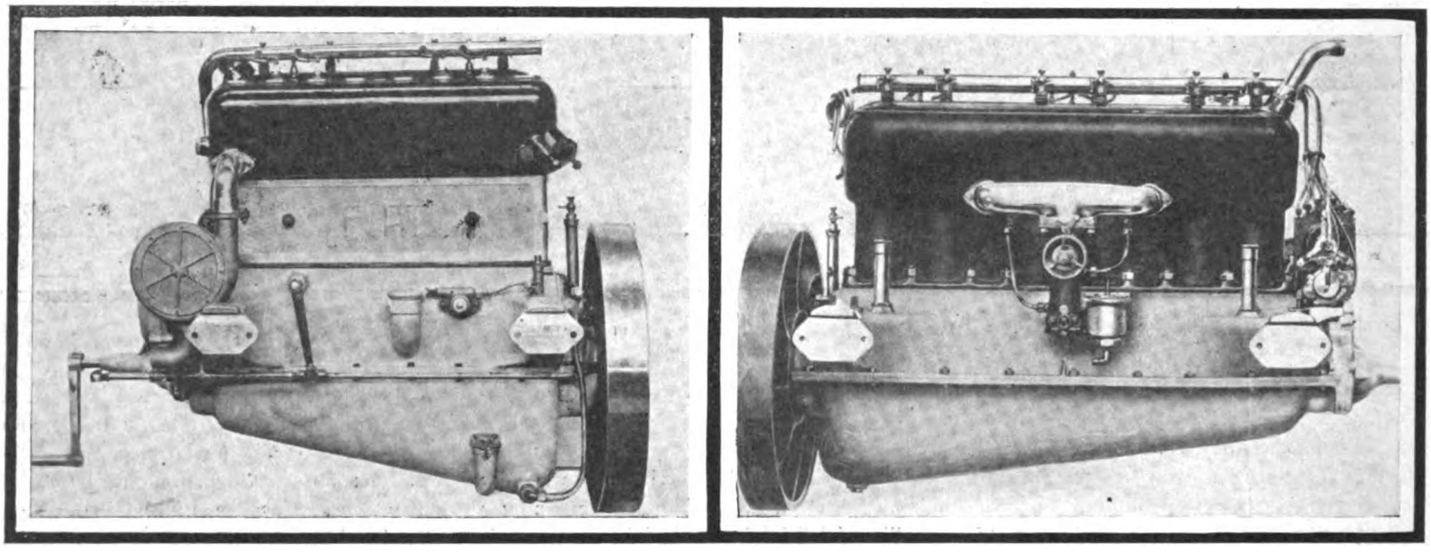
Differing from the usual construction, the rod which actuates the advance and retard lever of the magneto, which is a Bosch instrument operating a dual system, is passed through the crankcase. A short link enters the crankcase from the breaker box and hinges with a rod which emerges at the rear end of the case for connection with suitable linkage leading to the steering column.

In the transmission elements, no reason for change and little room for improvement has been found. The clutch is of the same multiple disc type running in oil that was perfected as long ago as 1904 and has been giving continuously good service ever since. It is contained in a housing bolted fast to the flywheel. Sixty-five discs are employed. The four-speed gearset has as one of its cardinal features its unusual compactness. Despite the fact that four forward speeds and reverse are provided, control being selective, the case measures only 10 inches in length. Shafts and gear wheels are alloy steel and no less than seven sets of ball bearings are used to mount them.

The combined rear axle housing and torque tube is one of the distinctive features of the car. The housing is formed in two pieces securely bolted together and is hung at the front end by means of a swiveling yoke the construction of which is peculiar to Fiat cars. The drive axles are of the semi-floating type and are mounted in R. I. V. ball bearings. In all models the brakes are mounted on the rear wheels, the drums being arranged to accommodate internal expanding emergency brakes and external contracting service brakes. The drums are 16½ inches in diameter and 2¾ inches in width.

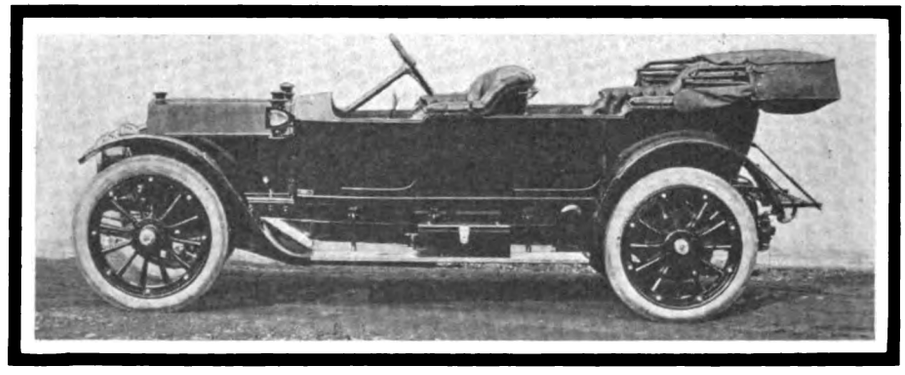


SIX-CYLINDER FIAT CHASSIS, SHOWING REAR AXLE CONSTRUCTION



FIAT "4-55" MOTOR, SHOWING COMPRESSION RELEASE LEVER, AND A SIDE VIEW OF THE "SIX"

In designing the forward components of the running gear a laudable and satisfactory attempt has been made to reduce tire wear and at the same time to increase the ease with which the car may be guided. To these ends, the front axle is slightly cambered



FIAT SIX-CYLINDER 50-HORSEPOWER TOURING MODEL

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and the steering pivots are arranged to give true pivotal steering. Which is to say, a line drawn through the centers of the steering pivots would meet at the road surface a line drawn through the wheel centers.

The wheelbases of the three models are 135 inches for the "six," which is mounted on 36 x 4½ front and 37 x 5 rear tires; 128 inches for the new model 55, which is mounted on the same size tires, and 123 inches for the four-cylinder 35-horsepower model which is mounted on 36 x 4½-inch tires both front and rear. All have demountable rims as a matter of course, the equipment including two spare rims. Springs in each case are semi-elliptic in front and three-quarter elliptic in the rear.

In emulation of so many other manufacturers who list their products with full equipment, Fiat cars are for the first time sent out from the factory ready for the road. In addition to the usual complement of top with side curtains and envelope, bulb horn, demountable rims, trunk rack, robe and foot rail, tire irons, tools, pump, jack and wheel puller, there is a specially designed rain-vision windshield, Gray & Davis electric lighting system, 100-mile Stewart & Clark speedometer-gradometer combined with a Seth Thomas external winding clock, a full set of electric lights and a large Klaxon horn.

On the six-cylinder chassis, the touring car with either curved panel or straight flush-side seven-passenger body, or the five-passenger phaeton or the convertible roadster lists at $5,000; limousine and landaulet sell for $6,000 and $6,100, respectively. The new model in either of the touring or the convertible roadster forms sells for $4,500, the limousine and landaulet prices being $5,500 and $5,600. The smallest four-cylinder model lists at $4,000 for either of the open styles and $5,000 and $5,100 for the limousine and landaulet, respectively.

Formula for Reckoning Miles per Hour.

If it is known that a car has traveled a given number of miles in a given number of seconds and it is desired to know the rate of speed in miles per hour, it can be obtained by the formula

$$M \times \frac{3600}{S} = \text{miles per hour.}$$

in which M is the distance and S the time in seconds.

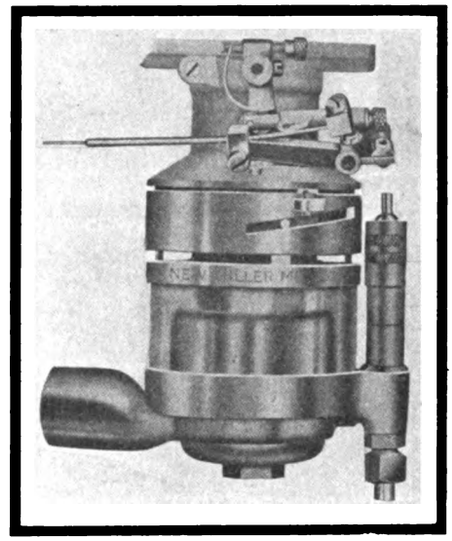
To Remove Screw with Broken Head.

One very good way to remove a cap screw from which the head has been broken is to thread the top portion and then screw on it a nut which has been half split with a hack saw. If a pipe wrench then is applied to the nut, the closing of the jaws will clamp the nut on the screw thread and the screw can be removed quite easily.

NEW-MILLER INCORPORATES AND WILL ENLARGE SCOPE

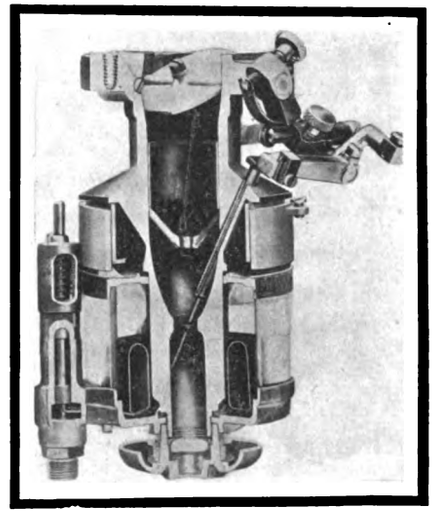
Growth of Business Necessitates Additional Working Capital—Carburetter Altered in Detail But Basically Unchanged.

Though it was engaged in the manufacture of carburetters for several years in California, and has carried on the same



NEW-MILLER CARBURETTER

business, since last spring, at its present location, 514 North Capitol avenue, Indianapolis, Ind., the New-Miller Mfg. Co. just



SHOWING INTERNAL CONSTRUCTION

has been incorporated with a capitalization of $200,000, the growth of the business since the establishment of the Indianapolis factory having been of such proportions that the manufacturing facilities have proven inadequate and the added capital was found necessary to permit extensions and enlargements to be made.

Nor has the improving hand itself been idle, for since it was described in detail in the Motor World of June 20 last the New-Miller carburetter has undergone several minor improvements with a view to increasing its efficiency and economy, but the basic principle and the major features are unchanged. Briefly, the instrument is based on the theory that positively controlled mechanical action, of proper design and construction, is better than automatic action. Therefore, there is nothing automatically operated in the New-Miller carburetter, the throttle, the gasolene needle valve and the auxiliary air valve being interconnected and the opening of each always bearing a definite relation to the opening of the others. These openings are capable of the most delicate and accurate relative adjustment, and it is the claim of the makers that, once correctly adjusted to a given motor, the carburetter will give satisfaction indefinitely without further regulation, except such increase or decrease in the opening of the needle valve as may be required to compensate for atmospheric changes. This adjustment is made from time to time as may be required, and is effected from the driver's seat.

Of the float feed type, the carburetter has an annular hollow metal float surrounding the central mixing chamber in which the spray jet is located. Above the jet the passage widens out into a cylindrical chamber in which slides a sleeve connected by a link with the throttle valve, of the butterfly type, at the top of the passage. The sliding sleeve regulates the area of opening of the auxiliary air ports, which are cut in the walls of the chamber. The trunnion on which the butterfly throttle swings carries on one of its extended ends a spring cam which acts on the needle-valve. Thus when the throttle is opened or closed the air and gasolene adjustments are positively opened or closed in constantly fixed relation.

The detail improvements referred to, while not radical in themselves, are claimed to have considerably enhanced the efficiency of the instrument. The proportions of the air ports have been altered and their area fixed, so that the maximum opening cannot be changed. A longer taper has been given the needle of the gasolene valve to permit of extremely fine adjustment. Means for heating the carburetter with hot water have been discarded and hot air intakes are furnished in all cases, there being a cut-out, however, which renders the use of hot or cold air optional. The needle-valve adjustment to compensate for changes in atmosphere conditions is so arranged as to be made only from the driver's seat, through a Bowden wire control. Lastly, brass bowls are fitted on three of the sizes instead of glass.

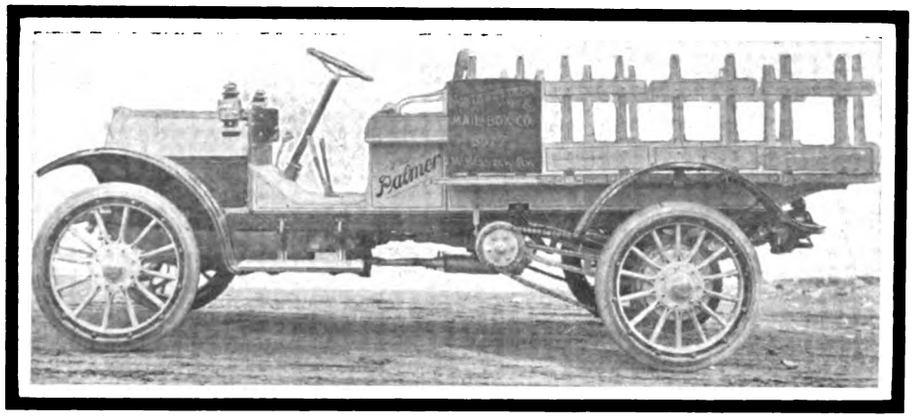
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STANDARD FEATURES ONLY IN THIS MISSOURI TRUCK

Unit Power Plant, Three-Speed Gearset and Chain Drive Employed—Conspicuous Absence of Novelties.

After having given the original model a strenuous test, the Palmer-Meyer Motor Car Co., of 5027 McKissock avenue, St. Louis, Mo., has completed arrangements for the construction of its 1,500-pound capacity commercial cars at the rate of about 300 a year, and now is actively in the market.

The machine, which is shown by the accompanying illustration, is of standard type throughout, offering nothing whatever in the way of novelty or startling features. The motor is placed forward under a hood and the load is carried well over the rear wheels in order to secure maximum traction. Solid tires are fitted.



PALMER 1,500-POUND TRUCK WITH STANDARD STAKE BODY

The motor has four cylinders, cast in pairs, and is rated at 26 horsepower; it is of the long-stroke type, the bore and stroke being 3⅝ inches and 4¾ inches, respectively. Water cooling is employed, the water being circulated by a centrifugal pump through a square tube radiator. All the motor bearings are of nickel babbit, split and shimmed for adjustment. The connecting rods are drop forgings of high carbon steel. The cams and camshafts are cut from single steel forging; timing gears are of steel, bronze and cast iron, advantage being taken of the various characteristics of these metals. The valves, all of which are on the right hand side and actuated by a single camshaft, are 1⅛ inches in diameter and the stems are completely enclosed, after the modern fashion.

The motor is lubricated by a constant level splash system, the oil being circulated by a positively driven plunger pump very accessibly placed on the side of the aluminum crankcase. The oil, after being splashed, drains back to a reservoir through a strainer, to be re-circulated. Ignition current is furnished by a magneto.

The casing of the three-speed gearset is bolted to the crankcase of the motor, forming a unit power. The clutch is of the disk type, running dry, and is provided with a spring adjustment. The shafts upon which the gears are mounted rotate in double annular ball bearings. Final drive is through side chains, the pull of the chains being taken on double rods of stout design.

The unit power plant is supported in the frame on a three-point suspension, plenty stiff enough to do its work without distress. All springs are semi-elliptics, 2 inches wide, 36 inches long in front and 46 inches rear; lubricators are fitted to the spring eyes to minimize friction and consequent wear at these points. The I-beam front axle is 2⅝ inches deep and 1¾ inches wide; the rear axle, which, of course, is of the fixed type, is a steel forging 1¾ inches square. All wheels run on ball bearings. The service brake drum is carried on the countershaft and is 10 inches in diameter and 1¾ inches wide, while the emergency brakes are, as usual, on the rear wheels, and are 13½ inches in diameter and of the same width as the service brake.

All the wheels, which are of the usual wood artillery type, are 34 inches in diameter; the front wheels have 12 spokes, 1½ inches square. The spokes of the rear wheels are of the same shape and size, but there are 14 of them. The tires, all of which are solid, are 2½ inches in front and 3½ rear, of the removable flange truck type. The wheelbase is 110 inches, the tread 56 inches and the car has road clearance of 13 inches.

The standard type of body, which is shown in the accompanying illustration, is of the low stake type, with a carrying capacity of 1,500 pounds. The chassis alone is priced at $1,450, and the prices complete with body varying according to the style. In the stake body the loading space is 84 inches long back of the seat. The standard equipment includes three oil lamps, horn and a complete set of tools carried in a special box. The car has a maximum speed of 25 miles an hour.

Twenty-five Exhibits at Grand Rapids.

Grand Rapids, Mich., is one of the towns which does not wait for New York to inaugurate the automobile show season. The local automobile dealers' association is an "early bird" and accordingly staged its fourth venture in the show line in the Klingman exhibition building from Tuesday, November 26th, to Saturday last, November 30th. In the matter of decorations, a green and white color scheme was indulged in in the choice of draperies, which effectively disguised the bare walls, and the streamers, which did like service for the ceiling; myriad incandescent lights, artistically arranged in streamers and clusters supplied the lighting effects. Motor cars, for both pleasure and commercial service, were exhibited by some 25 dealers; in all 36 different makes of automobiles were on the floor. Among the exhibitors were:

Abbott Motor Car Co., Abbott-Detroit; Adams & Hart, Imperial; Austin Automobile Co., Austin; Becker Auto Co., Ford; Buick Motor Co., Buick; Central Auto Co., Cadillac; Cowdin & Woodland, Cole; G. P. Dowling, Oakland and Hupmobile; W. S. Farrant, Chalmers and Regal; Hill Garage, Detroiter; Imperial Automobile Co., Imperial; International Harvester Co., I. H. C.; Grand Rapids Auto Co., Studebaker; B. F. Kenyon, Rambler; Mitchell Motor Co., Mitchell; Moran Auto Sales Co., Flanders "gas" and Flanders electric; B. W. Olin, Jackson; Oswald Motor Car Co., Kissel, Michigan and Baker electric; Overland Co., Overland, Marmon and Standard electric; Palmer Sales Co., Peerless; Peck Auto Co., Hudson; Rieske Auto Co., Cutting; Stratton-Woodcock Auto Co., White and Franklin; W. D. Vandercar, Reo; Robert Willey Auto Co., R. C. H., Winton, Crow, Hupp-Yeats electric.

Engine Starters Scarce at London Show.

According to statistics collected at the London show, engine starting devices are not viewed with a great deal of favor abroad. Among all the cars that were exhibited, representing the products of very nearly all foreign manufacturers, only 13 makes were equipped with engine starters. Of these 13, five were equipped with electric lighting and starting systems, three being American products; four were fitted with pneumatic devices, three had American spring starters, and one was fitted with an ignition starter which was operated in conjunction with a high tension magneto.

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MAKING AND USING TOOLS FOR REPAIR SERVICE

Conditions That Justify the Expense of Apparatus for Special Work—Constructional Details of Appliances That Can Be Made in Any Good Repair Shop—Using Factory Information and Mechanics' Ideas.

Every one concerned with the repairing of automobiles has at some time or other found it necessary to devise special tools for certain work, the object being to save time in some instances and facilitate awkward operations in others. The making of these tools sometimes entails considerable labor, and although of undisputed value at the time, and the cost having been charged upon the job for which they intended, nevertheless it is sometimes problematical whether such expense is justifiable. This point must be borne in mind when special tools are planned, because if the making of

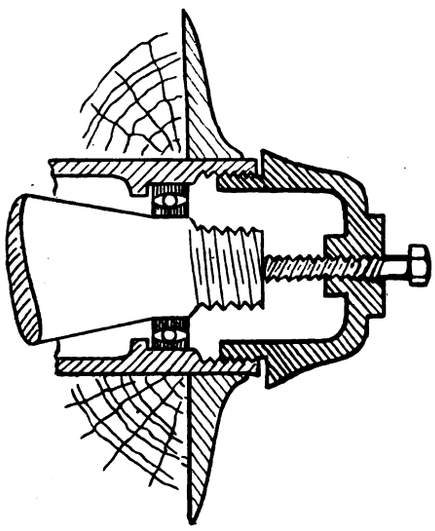


FIG. 1—WHEEL REMOVER

them is to be much more costly than the extra labor entailed in doing the work without them wherever this is possible, it is manifestly unfair to expect the customer to pay such additional expense. Cases arise, however, where ordinary tools will not answer the purpose, and in these cases charging for the manufacture of special tools is justifiable.

Factory Information Valuable.

Where a dealer or repairman handles many automobiles of the same make and model in the course of the year, he does not need to restrict himself to the number of special tools that he may make, as in the case of repetition work they undoubtedly will be of great value in the service end of his business and play an important part in curtailing the expenses of this department. In which connection it is a wise plan for dealers to get in touch with the engineering department of the factory they represent and find out what they can recommend in the way of tools; in this way may be found many solutions for problems that arise and cause trouble.

Producing Special Appliances.

Some of the factory tools are jealously guarded secrets, but when it is for the

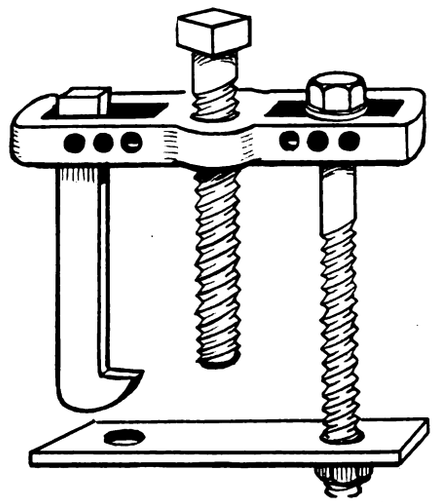


FIG. 2—UNIVERSAL PULLER

greater good of the greater number and when the possession of them tends to lessen the cost of upkeep by cutting down the labor bills, it is very short sighted policy to withhold the information. The case of the general repair shop that caters to all comers is in a measure different. The tools of a special nature then required are those that can be used in multifarious ways, and constitute time saving units that can be applied to almost any car and that will assist the man to do quicker and more accurate work.

The initiative of this tool making should not be left to the individual workman, nor, on the other hand, should their suggestions and efforts be ignored and discouraged. Ideas of practical men are valuable, and even if not feasible in the form in which they are presented, nevertheless silght alterations in detail may render them of considerable merit.

Clever labor saving devices may be turned to direct profit to the repairman, as is instanced by the wheel remover shown in Fig. 1. There is nothing particularly new in the idea, but it is a very rare occurrence to find the owner of an automobile in possession of such a handy and compact tool. It is not possible to keep in stock blanks for every type of hub cap, but existing hub caps can in nearly all cases be used as patterns from which the wheel withdrawal body can be cast. On the other hand, it is only a matter of a few minutes' work on the lathe to rough out a wooden pattern, and in some cases this will be even cheaper than wrapping the hub cap. The method of obtaining the casting is immaterial, as it will not have a large bearing on the fin-

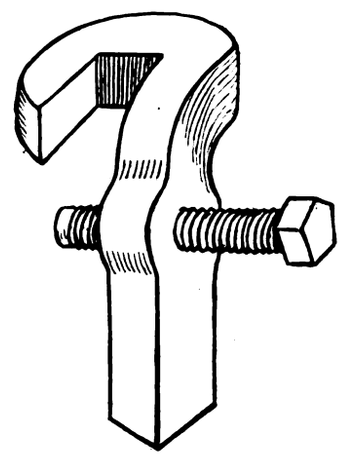


FIG. 3—ROD BENDER

ished article. The most convenient method will be the best one to use.

An Easily Made Wheel Puller.

A thread is cut on the new cap to correspond with that of the hub and a square boss is left on the outer portion to permit of tightening with an ordinary wrench. The cap is drilled and tapped to receive a bolt in the manner shown, the thickness of the material at the point where the bolt passes through being sufficient to allow the threads of the bolt to obtain a good hold. A 5/8 inch or 3/4 inch United States standard bolt and a boss of about 1 inch to 1½ inches in length will permit from 11 to 18 threads to engage, and this should be ample even if the wheel is a tight fit on the axle.

It is a curious coincidence that parts that are assembled with a driving or push fit

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often become so solidly joined together that the usual means of disengaging them fails. Pullers of various sorts have been devised to perform this work, and undoubtedly answer the purpose for which they are intended if the right size puller is on hand for the particular job. But the differences in sizes of parts makes in necessary to carry so many pullers in stock that the expense for many shops is prohibitive. The idea contained in the puller shown in Fig. 2 lends itself to varied applications, and the cost of making several of them of different sizes is not serious.

Universal Wheel Remover.

A piece of square bar is slightly drawn down at both extremities, leaving the middle approximately as indicated in the sketch, allowing plenty of stock available around the center bolt. The holes in the sides must be drilled equidistant from the center, to ensure an even pull, and as there are several of these holes the drop hook shown in the left of the illustration can be adjusted to suit different widths of work, it being understood that two hooks are employed, one on either side.

It is not always feasible to use hooks, bolts, or plates and bolts being preferable in some instances, especially if the material is soft. In order to accommodate these bolts, the top of the main bar is slotted, this being preferable to a series of holes, as the tool then becomes universal. The easiest way to slot this is to drill a series of holes close to one another, slightly larger than the diameter of the bolt, the intervening metal being removed with a chisel or file, or it can be cut away with a hacksaw. It goes without saying that a good quality steel must be used for the cross-bar and of suitable dimensions to prevent any bending when pressure is exerted, otherwise its utility will not be very great. The parts that it is proposed to separate may be so tight that they cannot be parted by simply screwing down on the center bolt. It is well to remember that there is a limit to all things, even to the strength of metal. In such a case a well directed blow of a hammer on the head of the center bolt, while the side arms are in tension, often helps to dislodge the obstinate member.

Bending Device for Connecting Rods.

Parallelism of connecting rods in relation to pistons and cylinders is absolutely necessary in order to obtain good results and prevent rapid wear. Any disalignment will produce wear, upon the cylinders in the first place, causing them to ovalize; next, upon the pistons, with the same results; then upon the big end bearings, from the unequal pressures, and this is sufficient to affect the journals of the crankshaft. By placing a square edge upon the base chamber and resting the upright side against the piston, after the connecting rod has been tightly bolted to the crankshaft, any disalignment will be immediately indicated. The causes of disalignment are many, the most common being due to uneven scraping

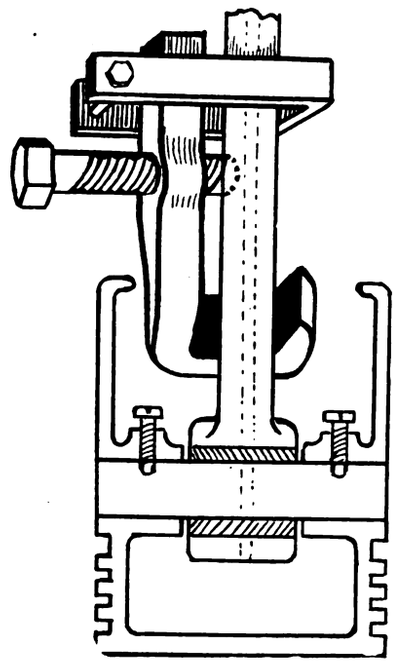


FIG. 4—BENDING A ROD

in of the bearings and uneven tightening of the big end bearing bolts.

With the crankshaft journal as a base and the connecting rod forming the perpendicular, it only requires a small amount

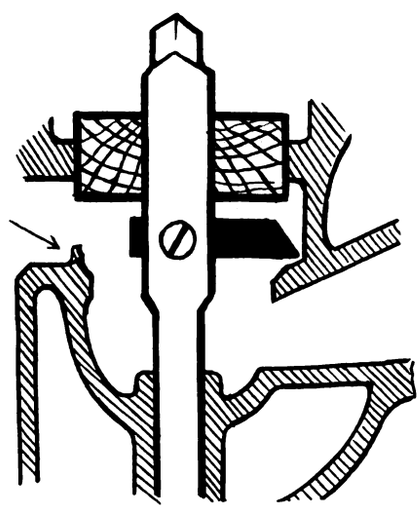


FIG. 5—VALVE RIDGE CUTTER

of metal to be inadvertently removed from one side of the bearing to throw the piston out of plumb. The purpose of the tool shown in Fig. 3 is to correct any such irregularity without removing the connecting rod after this has been bolted in position, and the method of application can be seen by referring to Fig. 4. The tool can be made with a hook at both ends, although it will answer just as well in the form here depicted by using a clip to steady the base. The hooked end is placed around the rod inside the piston, and presuming that the crank is brought to the top of its throw, and the clip secured, it only needs a slight pressure exerted by tightening the screw to bend the rod in whichever direction it is desired and as much as desired. This is an instance where one tool can be made for general use.

Valve Seat Ridge Cutter.

The tool shown in Fig. 5 belongs to the same class, the only difference being that, as the diameter of valve stems vary, several different size holders will be found necessary. It is not a vital necessity to have the stem of the cutter an exact fit in the guide, because the head of the valve seat does not have to be exact. This does not refer to the valve seat proper, but the portion of the casting around the top of the seat which is directly swept by the passing gases. After a valve has been ground several times it often occurs that there is a perceptible ridge remaining over the valve seat, as shown in the illustration with an arrow pointing to the "ridge." This will impede the free flow of the gases that pass the valves, and in the case of the exhaust these protrusions have been known to become incandescent, causing preignition. The tool for removing these obstructions consists of a piece of rod slightly smaller at the lower end and slotted to take a tool steel cutter which is held in position by means of a set screw. In place of the wooden bearing here shown screwed into the valve pocket, a bored-out valve cap plug is preferable, if such is easily obtainable. In the event that it is not available, a hardwood plug will answer, as it does not have to be an exact fit and if ordinary precaution is used the threads in the cylinder will not be harmed. The end of the tool protruding through the plug is filed square, to fit a standard tap holder.

Fiber Washers that Should be Wetted.

When fiber washers used in making up water joints appear to be slightly too small they should be soaked a few minutes in warm water. When thoroughly wetted they expand slightly, in which condition they should be applied.

Making File Edges "Safe."

For filing in corners where it is desired that only one surface shall be cut, files are made with "safe edges"—that is, blank edges, without teeth. Safe edges can very easily be made on ordinary files by simply grinding off the teeth.

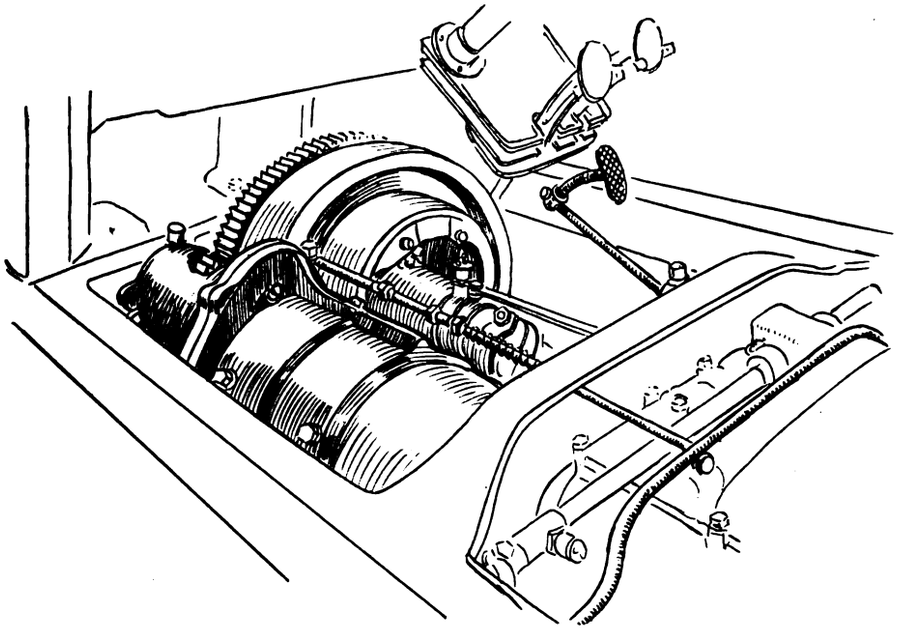
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ELECTRICALLY LIGHTING AND STARTING THE CAR

The Distinctive Features of a Simple Lighting and Starting System Using Three Principle Elements Set Forth in a Manner to Make Plain Their Care—Voltage Regulation by Speed Governing Explained.

(This is the eleventh of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render easier their care and repair by the dealer and owner alike.)

One of the peculiarities of human nature that speedily develops into a bad habit is the general disinclination to "fuss with" things mechanical as long as "the other fellow" is willing to do the fixing. The person who relies upon some one else to adjust his carburetter or to find and remedy ignition faults soon gets to believe in his own mind that the work is beyond his ken and

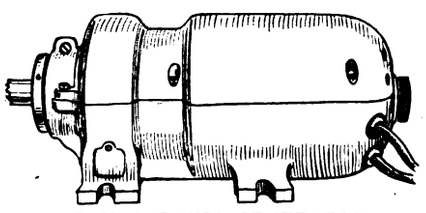


APPLICATION OF GRAY & DAVIS ELECTRIC ENGINE STARTER

he is likely to be thrown into a sort of panic if even the veriest sort of minor trouble develops when his willing friend is absent. Really, there is no necessity for the panic, particularly now, when automobile mechanism has been reduced to a point of simplicity where the applicability of the time-worn saying "even a child can run it" is apparent, and the friend in need would be a friend indeed if he would keep away and let mister man-afraid-of-himself doctor his own troubles. It is the only way for him to gain the confidence that is invariably necessary.

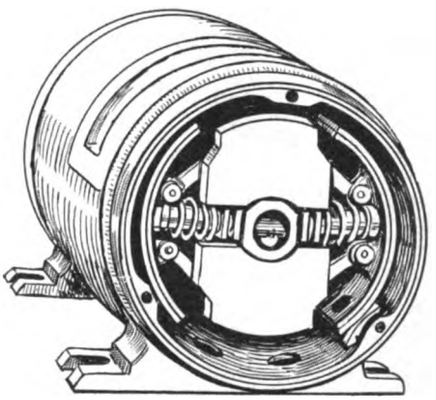
Confidence Gained May Be Surprising.

It is the same with electric lighting and engine starting systems. That all of them really are simple in construction and operation already has been pointed out in the past 10 issues of Motor World. It is doubtful, however, if those who are inclined to let "the other fellow" do the fixing ever will discover the truth; each must take hold of his own system and care for it himself; the confidence that will come of the experiment, if experiment it be, will be surprising. Not only will the owner or the dealer find that he is able to care for his electrical aquipment in the way it ought to be cared for, but he will discover also that the rest of the car of which he may or may not have been just a little bit afraid is not such a terribly fearsome conglomeration of mechanism after all.



GRAY & DAVIS GENERATOR

Obviously, indiscriminate tinkering is not to be encouraged; it may be, and generally is, bad for the mechanism. It is wise to let well enough alone — only be sure it is well enough before you let it alone. If the lights will not burn quite as brightly as they ought to, it is likely that some slight adjustment will bring them up to candlepower. If they cannot be lighted at all, it sometimes is the better part of wisdom to ship the apparatus back to the manufacturer for repair; in just as many cases, however, the trouble can be remedied by the owner or the dealer by the exercise of a little judgment and the application of his knowledge of the system, for modern automobile electrical apparatus is so constructed that troubles which require the ministrations of an expert seldom develop. The prime requisite is a working knowledge of the system; the owner ought to have it and the time rapidly is approaching where the dealer must have it if he is to be a successful dealer.



EXPANDING CLUTCH GENERATOR

Simple Components of Average Systems.

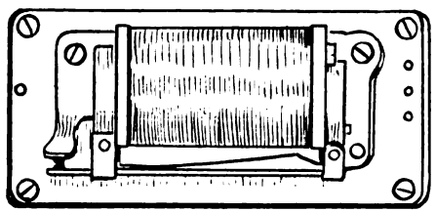
In all such systems, there must be a storage battery to furnish light—and possibly power; there must be a dynamo to charge the storage battery; and if the system is used to start the engine there must be a starting motor. The dynamo and the motor may or may not be combined according to the dictates of the manufacturer, though their combination does not of necessity increase the complexity of the system; in the opinion of not a few, it really simplifies the apparatus. Be that as it may, combined or separate, the care that is required to keep the system up to the top notch of efficiency is approximately the same in either case and the acquisition of the knowledge neces-

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sary to make sure that it is "well enough" is not a task that need cause any one any gray hairs.

Three Elements that Accomplish Much.

In the well-known Gray & Davis electric lighting and engine starting system, which is manufactured by Gray & Davis, Inc., of Boston, Mass., for instance, only the three



GRAY & DAVIS CUT-OUT

elements outlined in the previous paragraph are used, broadly speaking. Of course, there is an automatic cut-out, for all such systems must have something of the kind, and there is a combined volt and ampere meter, and a switch and what is termed a junction box, the latter being merely a centralized distribution panel for the wires that lead to the lamps and the electric starter.

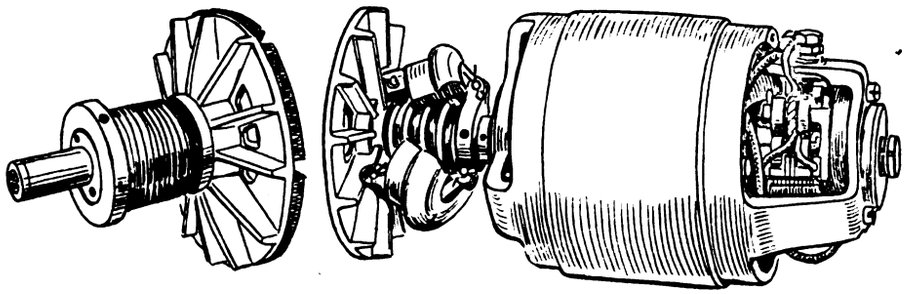
In common with several other manufacturers, Gray & Davis has preferred to separate the dynamo from the motor which starts the engine. The former is of the compound wound constant-speed type and is mounted to be driven from any convenient rotating shaft on the engine, and the latter drives the engine through the intermediary of gearing cut in the periphery of the flywheel. The automatic cut-out is of the simple magnetic variety, in which two windings are used in such a way as to ensure positive connection during the time the dynamo voltage is greater than the battery voltage and to break the circuit without fail instantly the battery voltage becomes the higher, as, for instance, when the engine is stopped and the dynamo is idle. It is mounted on the dash and is illustrated herewith with the cover removed.

Theory of Constant Armature Speed.

By way of obtaining dynamo output regulation, the manufacturers have adopted what is probably the simplest method of all. The speed of the armature is maintained constant by means of a governing friction clutch; and as the machine is of the compound wound type, the current output is proportioned to the load. That is to say, the voltage remains constant regardless of engine speed fluctuations, but the amperage increases as the lights are turned on, due to the automatic increase in the strength of the field

Output Governed by Simple Clutches.

In order to obtain constant armature speed, two methods are used in the two different types of dynamos which are produced. In one, the clutching device is composed of two plates, one of which is aluminum and is faced with asbestos fiber and the other is cast iron, the plates being pressed together by means of a vanadium steel spring, the action of which is governed by centrifugal force obtained through the medium of two weights suitably connected. In the other, the clutching device is of the internal expanding variety. The characteristics of both are the same and both are illustrated herewith the better to make plain their construction.



GRAY & DAVIS DYNAMO SHOWING PLATE CLUTCH GOVERNOR

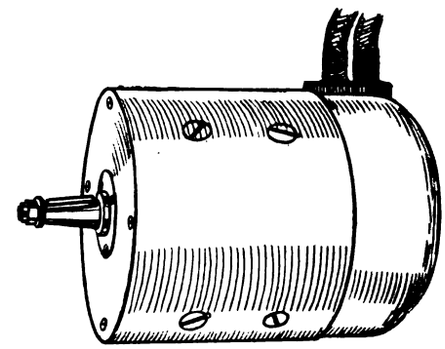
In operation, the dynamo is connected to the engine through the intermediary of a "silent" chain or a V-section leather belt, the gearing being such as will permit a normal speed of 1,200 revolutions a minute without slippage of the clutch. Of course, when the engine is speeded up, the weights will cause the spring pressure to be released slightly and the clutch will slip. Under normal conditions, with the car engine alternately accelerated and retarded, the dynamo clutch will slip almost continuously and in order to dissipate the heat which inevitably must be generated, a forced draft through the dynamo is provided by fan shaped wings cast on the plates of the clutch. By reason of the fact that the clutch spring pressure amounts to not more than one pound per square inch and the clutch surface is large—approximately 16 square inches—wear is minimized. Adjustment is provided, however, and may be made by turning a small nut located at the end of the shaft without the necessity for disturbing any of the parts. The weights are so proportioned that the dynamo can be overloaded at least 50 per cent. without detrimental effect, though an increase of speed of not more than 5 per cent. over 1,200 revolutions a minute causes instant response in that the clutch then commences to slip, holding the armature speed positively to 1,200 turns.

Like the dynamo, the Gray & Davis starting motor is exceptionally small and compact and is thoroughly protected from dirt and water; in fact, there are no openings whatsoever to permit of the ingress of foreign matter. Access to the brushes and commutator is had by means of a removable cap at one end.

By way of reducing complexity, to say nothing of reducing weight, the starting motor operates on the purely nominal pressure of six volts. As the lightning circuit also is a six-volt circuit, it may be appreciated that the wiring plan is materially simplified by the single voltage. Incidentally, the low pressure and amperage obviates the necessity for excessively heavy switches and wiring. The voltage is the same, by the way, as generally is used for ignition circuits.

What to Do in Case of Trouble.

In caring for the Gray & Davis system, it should never be necessary to touch the automatic cut-out other than to remove the cover and make sure that it is operating properly. The contacts should come together when the car speed is approximately 12 miles an hour, and they should separatea immediately the car speed is reduced to eight miles an hour. Inasmuch as the circuit is made and broken through the cut-out only at long intervals, wear at the contacts practically is nil. The only trouble which might occur would be due to foreign



GRAY & DAVIS STARTING MOTOR

matter collecting between the contacts; oil on the contacts will prevent proper connection being made and is likely to cause verdigris. In either case, the contacts can be brightened by gently polishing them with very fine emery cloth, two small pieces being glued to opposite sides of a piece of thin Bristol board.

The action of the cut-out, otherwise

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known as a circuit breaker, can be determined with the aid of the combination volt-ammeter. When the engine is turning over slowly and no lights are turned on, the needle of the meter will stand at zero. When the engine is speeded up, the needle should swing over to the charge side. When the lights are turned on or the starter is used, the needle should swing over to the discharge side.

In the dynamo and the motor, there is nothing to get out of order, and the only parts that ever will require attention are the brushes and the commutator. By reason of the fact that the dynamo is run at constant speed and the starter is used only at infrequent intervals, perfect commutation should obtain for upward of 20,000 miles, which is equivalent to approximately two years' service.

Occasional Inspection Is Desirable.

However, it can do more good than harm occasionally to remove the cover over the commutator and brushes and inspect the mechanism, clearing away any accumulations of dust and dirt and carefully removing excess oil that may have collected. Just as long as the commutators exhibit a clear brownish glaze they should be let severely alone, for they then are in the best possible condition. If, however, they appear inordinately dry and the bright metal can be seen, they should be carefully sandpapered by holding No. 00 sandpaper against them while the armature is rotating, first removing the brushes. For a finishing touch a very minute quantity of fine vaseline can be applied with the aid of a piece of felt held against the commutator with the brushes in place while the machine is running. Care must be taken not to use too much vaseline, however, or it will gum up the brushes and the result will be poor commutation. The brushes should be cleaned all over occasionally with a cloth dampened with gasolene to remove carbon dust and traces of oil. It must be seen to that they slide quite easily in their holders. The shaft bearings of the dynamo and the motor should receive no more lubrication than is accorded the magneto. A few drops of fine machine oil about once a month will suffice.

The starting motor is placed in operation by depressing a small pedal supplementary to the clutch and brake pedals, the action serving first to enmesh the driving gears on the periphery of the flywheel and then to connect the motor to the battery. As the starting switch is ruggedly constructed it will never give trouble and need not be touched. It is wise, however, occasionally to go over the rods actuating the gear enmeshing mechanism and the switch and to place a couple of drops of oil on the bearings—but not on the switch.

ROTATION IN OFFICE MAKES NEW YORKER HEAD OF A. A. A.

Ohio Fight Enlivens Annual Meeting But Chief Disturber Is Dropped—Association's Attitude on Federal Aid Defined.

Laurens Enos, one of the best known motorists of Buffalo, N. Y., moved up into the presidency of the American Automobile Association at its annual meeting in Chicago on Monday last, 2nd inst. He was chosen to succeed Robert P. Hooper, of Philadelphia, who relinquished the office after having served two useful terms, to which considerable excitement had been contributed by the "war" in Ohio, which still is in progress. The new president took it over as the most unpleasant heritage of his office, and one which probably will prevent his duties from growing monotonous.

The other officers chosen are as follows: First vice-president, John A. Wilson, of Pennsylvania; second vice-president, Dr. H. M. Rowe, of Maryland; third vice-president, Ralph W. Smith, of Colorado; fourth vice-president, F. L. Baker, of California; fifth vice-president, Asa Paine, of Minnesota; secretary, John W. Brooks, of Connecticut; treasurer, H. A. Bonnell, of New Jersey; chairman of executive committee, A. G. Batchelder, of New Jersey.

Ralph W. Smith, of Colorado, and F. L. Baker, of California, were the only vice-presidents re-elected. During the year First Vice-President Frank M. Joyce, of Minnesota, died, and the elevation of Laurens Enos from the second vice presidency to the presidency naturally left those two offices vacant. The vice-president who was dropped was Dr. C. L. Bonifield, of Ohio, the cause of most of the turmoil in that State and in the A. A. A. itself. The secretary, the treasurer and the chairman of the executive committee were re-elected. Chairmen of boards were re-appointed as follows: Good Roads, George C. Diehl, Buffalo; Legislative, Charles Thaddeus Terry, New York; Touring, Howard Longstreth, Philadelphia; Contests, William Schimpf, New York.

As was the case last year, when the annual meeting was held in New York, two warring Ohio factions appeared orally armed for the fray. They were led, respectively, by Dr. Bonifield, of Cincinnati, and H. L. Vail, of Cleveland, the former the president of the Ohio Automobile State Association, and the latter the chief spokesman for the Ohio State Motor Federation, which was organized by the bolters from the Ohio State meeting of 1911, which they declared had been "packed" with mush-room clubs by Dr. Bonifield and his adherents.

During the year the Federation had appealed to the executive committee of the A. A. A. for recognition as the national organization's official representative in Ohio, which recognition, however, was denied. In Chicago, on Monday last, the fight was reopened when the Federation filed a formal application for recognition. Although the Bonifield element had bombarded him personally, and despite his sympathies, President Hooper upheld it and ruled that as the Federation's application was not in proper form and had not been filed at the proper time it could not properly be considered. His action precipitated a long and turbulent discussion, but he remained firm and, as a result—and very properly—the Ohio State Automobile Association retains official recognition, despite the fact that Bonifield and most of his followers have made themselves obnoxious.

The fight between the Ohio factions is so warm that the same reports of secession which followed last year's session are again current, and no man can say what the end will be.

Matters pertaining to good roads, to which the A. A. A. is so firmly committed, served as a peaceful offset to the turbulence created by the Ohioans. George C. Diehl, chairman of the A. A. A. Good Roads Committee, offered a resolution, which was passed, and which clearly defines the A. A. A. position in respect to "Federal aid" in the building of highways.

The report of the treasurer showed all bills paid and a balance on hand of $3,293.07. This favorable condition is largely due to the fact that Chairman Schimpf, of the contest board, as an amateur, does not draw a salary. This enabled him to turn over to the Association $5,000, although at the beginning of his term there was a deficit of $1,600. According to the working agreement existing between the A. A. A. and the Manufacturers' Contest Association, the latter body was to make good any deficit of the sort, but the health of the M. C. A. has not been of the best during the past year, and it remained for the non-salaried chairman of the A. A. A. contest board to keep the treasury full.

Richmond, Va., was selected as the city in which the next annual meeting of the association will be held.

In the preamble of the resolution the association asserts belief in the principle of State Aid and State Highway systems, and pledges itself to assist in obtaining State built and State maintained roads, with State Aid and supervision of county, market and township tributaries. Furthermore, attention was called to the general acceptance by automobilists of an unconstitutional

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tax, called a "registration fee," simply because the money so raised is used for highway maintenance purposes.

The preamble also remarks the undesirability of distributing Federal funds for the piecemeal improvement of local roads, and places the A. A. A. on record as being definitely opposed to any sort of Federal aid which does not comprehend this general inter-State system of national roads constructed and maintained under the supervision of the Federal government. The resolution itself, as adopted by the A. A. A., is as follows:

Resolved, That this association hereby declares itself in favor of National roads as the specific object upon which Federal appropriations for good roads should be spent.

Resolved, That this association as the National body of automobilists shall do all in its power to discourage "pork barrel" methods in National roads appropriations, and shall use its influence with its constituent State bodies and local clubs to induce them as organizations, and their members as individuals, to assist in averting the great harm which the good roads movement would suffer if Federal appropriations for highways are permitted to become prizes for distribution among Congressional districts as a reward for political service.

Another resolution was introduced by Howard Longstreth, of Pennsylvania, which urges Congress to provide for a bureau of road travel, to be under the direction of the Secretary of the Interior, which, among other things, will have to do with the systematic marking of the National and State roads.

The report of William Schimpf, chairman of the contest board, showed that during the past year 132 sanctions had been granted, as against 116 last year and 175 the previous year. While the number of sanctions has increased, the number of registered drivers, however, had fallen off, from 819 to 575. Of this number 26 were amateur drivers.

Didn't See Races; Wants Money Back.

Because William Wallace, who hails from Quaker Town and who journeyed all of the way out to Milwaukee, Wis., to witness the Vanderbilt, Grand Prize and other speed clashes, was unable to tarry when the races were postponed for a week and therefore had his trip for naught, he has instituted suit against the Milwaukee Automobile Dealers' Association, which promoted the races, to recover the $120. That is the amount, he alleges in his complaint, that he paid for grandstand tickets to witness the racing and which he was unable to dispose of before his return to his Philadelphia home.

MEN, HORSES AND CARS IN FORT WORTH'S MIXED MEET

Mosley Is Honor Man in Automobile Events, Winning Five of Nine Races in Three Days—Clark Takes Three.

Weather conditions which, to put it mildly, were far from ideal seriously affected the attendance on the first and third days of the mixed—foot, horse, motorcycle and automobile—race meet which was held under the auspices of the Fort Worth (Tex.) Driving Club on Wednesday, Thursday and Friday, November 27th, 28th and 29th; all told, however, the conditions on Thanksgiving Day left little to be desired.

Of the honors in the automobile program, the better part went to C. Mosley, who, driving a Studebaker car, accounted for two of the three five-mile events which were on the program for each of the three days. George Clark, who, as usual, drove a Mercedes, cleaned up the free-for-all numbers which were run on Wednesday and Thursday, and in all probability would have done as much for a similar event which was run on the final day had not trouble prevented his starting. The summary:

Wednesday, November 27th.

Five miles, for cars with displacements of 231-300 inches—Won by C. Mosley (Studebaker); second, Chas. Craig (Studebaker); third, Wilbur Beaty (Studebaker). Time, 7:20.

Five miles, for cars with displacements of 300-450 inches—Won by C. Mosley (Studebaker); second, Chas. Craig (Studebaker); third, Fred Spreen (Pathfinder). Time, 6:45.

Five miles, free-for-all—Won by George Clark (Mercedes); second, Chas. Craig (Studebaker); third, W. Hearne (Cutting). Time, 6:43.

Thursday, November 28th.

Five miles, free-for-all—Won by George Clark (Mercedes); second, C. Mosley (Studebaker); third, Chas. Craig (Studebaker). Time, 6:17.

Five miles, for cars with displacements of 231-300 inches—Won by C. Mosley (Studebaker); second, W. Beaty (Studebaker); third, H. Schmidt (Buick). Time, 6:40.

Five miles, for cars with displacements of 300-450 inches—Won by C. Mosley (Studebaker); second, W. Beaty (Studebaker); third, H. Schmidt (Buick). Time, 6:39.

Friday, November 29th.

Australian pursuit, about 10 miles—Won by C. Mosley (Studebaker); second, H. Schmidt (Buick); third, Chas. Craig (Studebaker). No time taken.

Five miles, for cars with displacements of 231-300 inches—Won by C. Mosley (Studebaker); second, H. Schmidt (Buick); third, W. Beaty (Studebaker). Time, 6:41¼.

Five miles, free-for-all — Won by H. Schmidt (Buick); second, C. Mosley (Studebaker); third, C. Craig (Studebaker). Time, 6:41.

Six Thousand See "Exhibition" Meet.

Barney Oldfield staged his first "exhibition" meet on the one-mile track at the County Fair grounds, Fresno, Cal., on Sunday, November 24th. Though advertised as an exhibition meet which was closed to outsiders, in compliance with the rulings of the contest board of the A. A. A. as interpreted by the Western representative, P. J. Walker, fully 6,000 spectators were on hand, and great was the disappointment when no competitive numbers were run. Oldfield made the best showing of the day, when he drove the Christie for a single mile in 48 and 47⅕ seconds, respectively, times which are better than the record established by Burman at Brighton Beach on September 7th, but which will not be officially recognized because they were not electrically timed. Fred Melaun, driving a Benz, covered two miles in 1.51⅘, and driving a Cino, a single mile in 58 seconds.

Weathers Wins Thanksgiving Road Race.

Bert Weathers, who drove a Mercer car, won the 100-mile road race which was run on a ten-mile course at Visalia, Cal., on Thanksgiving Day, under the auspices of the Automobile Club. Second honors went to Johnson, who drove a Hupmobile; third place is disputed by Hammett (Nyberg) and Newkirk (Ford). One accident, which probably will result fatally to the driver, occurred when the car driven by George Williams skidded and upset in a ditch, pinning Williams beneath it. He was removed to the hospital, where it was stated that his chances for recovery are practically nil.

Overgaard Heads Nebraska Association.

A. R. Overgaard, of Fremont, has been elected president of the Nebraska State Automobile Association. The other officers are: First vice-president, Lee Huff, Omaha; second vice-president, C. E. Parsice, Minden; third vice-president, H. E. Gladfelter, Central City; secretary, O. C. Turner, Omaha; treasurer, E. R. Wilson, Omaha. The board of directors comprises: B. A. George, Lincoln; Carl Johnson, Havelock; Lee Huff, E. R. Wilson, Omaha; A. P. Overgaard, Fremont; J. E. Doty, David City; D. C. Dally, Beatrice; Ray Rarrison, Grand Island; E. A. Mason, Bloomfield.

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VIRGINIANS ENTERTAINED BY DISBROW'S FAST FLYERS

Disbrow Himself Takes Lion's Share of Honors at Two-Day Racemeet —Morton Twice Goes Through Fence—and Lives.

Despite chilling blasts and weather which otherwise was more or less inclement, spectators were not lacking nor were the numbers meager at the two-day speed carnival which was staged on the mile track at the State Fair grounds, Richmond, Va., Friday and Saturday last, November 29th and 30th, by the Richmond Automobile Club. The better part of the honors which accrue from the contest went to Louis Disbrow, who, as usual, drove a Simplex in the competitive numbers in which he was entered and a reconstructed Fiat in the time trials.

On the first day, besides making a mile in 1:09½ in the time trial, Disbrow won both of the feature events of the day—a ten-mile free-for-all handicap which he completed in 11:03, starting from scratch, and all three heats of a special race, the first heat of which went for a single mile, and the second and third for two miles and in which his times for the respective heats were 1:13, 2:15 and 2:17½. The remaining events in the first day's program comprised a five-mile contest for touring cars, which went to John Minker (Kline) in 6:49½; a ten-mile contest for touring cars and roadsters with a price limitation of $1,600 and which K. C. Taylor (Buick) accounted for in 14:20½, and a five-mile match race between Joe Nikrent (Case) and Barber (Warren), which was completed with Nikrent in the lead in 6:33½.

On Saturday Disbrow made even a better showing and took three of the competitive numbers and lowered the local track record for a single mile to one minute flat, from the 1:06 which Oldfield made three years ago. His victories on the second day comprised a five-mile event for cars with displacements of under 600 inches, which he accounted for in 5:16½; a five-mile free-for-all, which was won in 5:21¾, and what proved to be the most interesting number on the program, a 25-mile free-for-all. Disbrow's time for the latter event was 26:49. Of the remaining events, Spencer Wishart took the ten-mile contest for cars with displacements of 231-300 inches in 10:43½; Taylor won a special five-mile event for old touring cars, covering the course in 7:13¾, and Joe Nikrent went to the fore in the ten-mile contest for cars with displacements of under 451 inches. His time was 10:59¾.

William Morton, who was placed in several of the contests, created no little excitement when he went through the fence when his tire burst during the running of the 10-mile event for light cars. Happily neither driver nor mechanician were hurt, nor was the car damaged to an extent sufficiently great to necessitate its withdrawal. Morton was in luck, as he escaped injury when he again went through the fence while on his eighth lap in the 25-mile free-for-all and with similar results. The summary:

Friday, November 29th.

Five miles, for touring cars—Won by John Minker (Kline); second, William Morton (Kline); third, Louis Menenghetti (Stevens-Duryea). Time, 6:49½.

One mile, time trial—Louis Disbrow (Fiat). Time, 1:09½.

Ten miles, for touring cars and roadsters costing under $1,600—Won by C. K. Taylor (Buick); second, R. F. Kaehler (Ford); third, George Booth (Maxwell). Time, 14:20½.

Heat race. First heat one mile, second and third heats two miles. First heat—Won by Louis Disbrow (Simplex). Time, 1:13. Second heat, first division—Won by Louis Disbrow (Simplex); second, Dave Lewis (Stutz); third, William Morton (Kline). Time, 2:24½. Second heat, second division—Won by John Minker (Kline); second, Spencer Wishart (Mercer); third, Joe Nikrent (Case). Time, 2:15. Third heat—Won by Louis Disbrow (Simplex); second, John Minker (Kline). Time, 2:17½.

Five miles, match race—Won by Joe Nikrent (Case); second, Barber (Warren). Time, 6:33½.

Ten miles, free-for-all handicap—Won by Louis Disbrow (Simplex), scratch; second, William Morton (Kline), 20 seconds; third, John Minker (Kline), 20 seconds; fourth, Joe Nikrent (Case), 20 seconds; fifth, Dave Lewis (Stutz), 12 seconds. Time, 11:03.

Saturday, November 30th.

Five miles, for touring cars—Won by John Minker (Kline); second, Morton (Kline); third, Louis Menenghetti (Stevens-Duryea). Time, 6:17½.

Ten miles, for cars with displacements of 231-300 inches—Won by Spencer Wishart (Mercer); second, Joe Nikrent (Case); third, William Morton (Kline). Time, 10:43½.

One mile, against the local track record of 1:01—Louis Disbrow (Fiat). Time, 1:00. New record.

Five miles, for old cars—Won by Taylor (Buick); second, Gordon (Metz); third, Kaehler (Ford). Time, 7:13¾.

Ten miles, for cars with displacements of under 450 inches—Won by Joe Nikrent (Case); second, William Morton (Kline); third, Dave Lewis (Stutz). Time, 10:50¾.

Five miles, for cars with displacements of under 600 inches—Won by Louis Disbrow (Simplex); second, Dave Lewis (Stutz); third, Joe Nikrent (Case). Time, 5:16½.

Five miles, free-for-all—Won by Louis Disbrow (Simplex); second, Dave Lewis (Stutz); third, William Morton (Kline). Time, 5:21¾.

Twenty-five miles, free-for-all—Won by Louis Disbrow (Simplex); second, Joe Nikrent (Case); third, William Morton (Kline). Time, 26:49.

Burman Makes Moross Meet.

True to his word, Barney Oldfield did not appear as a competitor at Ernie Moross's first California meet, on the Emeryville track, Oakland, on Sunday, November 24th, so that Moross's "star," Robert Burman, had things practically his own way from start to finish. Of the six events which made up the program, Burman took four and finished second in the fifth, a five-mile free-for-all handicap, which went to Joe Horan in 4:39. The remaining event was for light cars and went to Kirk Dunham (Detroiter), who completed the circuit in 5:52⅕. In addition to his victories, Burman drove an exhibition mile in 50 seconds, thus lowering the local track record by six seconds. The summary:

One mile, time trial—Robert Burman (Benz), time, 0:50.

Five miles, for cars with displacements of 161-230 inches—Won by Kirk Dunham (Detroiter); second, A. J. Edwards (R. C. H.). Time, 5:52⅕.

Five miles, for cars with displacements of under 600 inches—Won by Robert Burman (Cutting); second, Joe Horan (Darracq). Time, 5:01.

Three miles, free-for-all, for the Remy Brassard and trophy. First heat—Won by Robert Burman (Darracq); second, Joe Horan (Mercedes); third, Janette (Benz). Time, 2:56⅘. Second heat—Won by Robert Burman (Darracq); second, Joe Horan (Mercedes); third, Harkins (Benz). Time, 2:52⅕.

Ten miles, for cars with displacements of under 600 inches—Won by Robert Burman (Cutting); second, Joe Horan (Darracq). Time, 10:08.

Five miles, free-for-all handicap—Won by Joe Horan (Benz); second, Robert Burman (Darracq); third, A. J. Edwards (R.C.H.). Time, 4:39.

Making a Drill Bore Oversize.

A flat drill that is a trifle too small may be made to cut a hole larger than its own width by grinding it unequally, leaving one cutting edge longer than the other, so that the drill will rotate eccentrically.

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1,019,209. Carburetter for Internal Combustion Engines. Tom Welsh, Moffat, Scotland. Filed Jan. 21, 1910. Serial No. 539,365. Single jet supplied by capillary attraction.

1,019,222. Internal Combustion Engine of the Revolving Cylinder Type. Alfred B. E. Cheeseman, London, and Joseph G. Florence, Walthamstow, England. Filed May 27, 1911. Serial No. 629,907. Revolving cylinder two-cycle motor.

1,019,254. Motor Vehicle. Russell Huff, Detroit, Mich., assignor, by mesne assignments, to Packard Motor Car Company, Detroit, Mich, a Corporation of Michigan. Filed May 27, 1907. Serial No. 375,962. Offset frame and body sills.

1,019,267. Friction Clutch. George Cushing Martin, Los Angeles, Cal. Filed May 19, 1910. Serial No. 562,297. Relative motion of members controls application.

1,019,286. Pneumatic Tire. Willard Irving Twombly, New York, N Y., assignor to Twombly Motors Company, New York, N. Y., a Corporation of New York. Filed July 22, 1910. Serial No. 573,180. Flexible metallic cover over inflatable tube.

1,019,301. Emergency attachment for Vehicle Wheels. Edward T. Burrowes, Portland, Me. Filed June 23, 1909. Serial No. 503,854. Means of support for an auxiliary rim.

1,019,340. Signal. Joseph C. McGowan and Robert W. Michler, Perris, Cal., assignors of one-third to Mathias P. Deutsch, Perris, Cal. Filed Oct. 30, 1909. Serial No. 525,529. Electric system for signalling when tires are flat.

1,019,354. Explosive Engine. Henry J. Podlesak, Chicago, Ill. Filed Dec. 7, 1910. Serial No. 596,063. Jump spark ignition system.

1,019,372. Automatic Gasolene Vending Machine. Randolph Shaffer, Albany, Ga. Filed Sept. 16, 1911. Serial No. 649,663. Coin operated fuel dispenser.

1,019,374. Valve. James Shaw, San Francisco, Cal. Filed May 11, 1910. Serial No. 560,711. Conical, reciprocating valve enclosed in cylindrical casing.

1,019,396. Process of Producing Conical Clutch Facings. Howard S. Williams, Cleveland, Ohio. Filed Mar. 22, 1911. Serial No. 616,144. Forming facings from strap by wetting and drying in shape.

1,019,421. Bracket Attachment. Joseph W. Briggs, Reward, Cal. Filed Mar. 2, 1911. Serial No. 611,772. Permits motion of one light while other is stationary.

1,019,442. Gasolene Measuring Rule. Frank M. Edmonds and Russell J. Goodnow, Boston, Mass.; said Edmonds assignor to said Goodnow. Filed Nov. 3, 1910. Serial No. 590,438. Slidable pointers for adjustment to irregularly shaped tanks.

1,019,453. Fluid Measuring Device. Russell J. Goodnow, Boston, Mass. Filed Sept. 5, 1911. Serial No. 647,523. Means of attaching slidable pointers.

1,019,468. Tire Protector. Ralph V. Hastings, Chicago, Ill. Filed Mar. 8, 1911. Serial No. 613,141. Flexible tire cover fitted with pyramidal tread blocks.

1,019,469. Combined Anti-Skidding and Jack Attachment for Automobiles. Florence Frank Heffernan, New York, N. Y. Filed May 20, 1911. Serial No. 628,378. Drag brake and rest for top of jack.

1,019,488. Valve for Explosion Engines. Arthur Constantin Krebs, Paris, France, assignor to Societe Anonyme des Anciens Etablissements Panhard & Levassor, Paris, France. Filed June 15, 1910. Serial No. 566,983. Concentric inlet and exhaust valves.

1,019,495. Internal Combustion Engine. Alonzo Lafontaine and Rosario Lafontaine, St. Stanislas, Quebec, Canada. Filed Aug. 28, 1911. Serial No. 646,335. Piston exhaust valve.

1,019,504. Shock Absorber. Charles H. McCombs, Cleveland, Ohio, assignor of one-half to Charles S. Britton, Bratenahl, Ohio. Filed Apr. 7, 1911. Serial No. 619,548. Cylinder with frictional piston.

1,019,513. Gas Engine. Robert S. Moore and James Lee Simmons, Washington, D. C., assignors to The Gyro Motor Company, Washington, D. C., a Corporation of the District of Columbia. Original application filed Nov. 1, 1910, Serial No. 590,236. Divided and this application filed Mar. 30, 1911. Serial No. 617,855. Oil guard on piston.

1,019,536. Pneumatic Wheel. Adam Charles Schroeder, Derry Station, Pa., assignor of one-half to Conrad Proessler, Pittsburgh, Pa. Filed June 17, 1911. Serial No. 633,685. Sectional pneumatic tire combined with helical springs on spokes.

1,019,552. Alarm for Automobiles. Wilson E. Symons, Chicago, Ill. Filed May 15, 1911. Serial No. 627,259. Electric burglar alarm which operates when the motor is cranked.

1,019,557. Tire Alarm. Elmer Alonzo Terpening, Mokena, Ill. Filed Mar. 19, 1909. Serial No. 484,368. Electric device for showing the air pressure in the tires.

1,019,563. Gas Engine. Julius M. Ulrich, Greenwich, Conn., assignor of one-half to William Rahr, Jr., Manitowoc, Wis. Filed Aug. 14, 1906. Serial No. 330,577. Carburetter placed between the crank chamber and the combustion chamber on a two-cycle motor, and means of controlling passage of air.

1,019,571. Automobile Horn. Louis West, Rochester, Minn. Filed Mar. 7, 1911. Serial No. 612,769. Blower fan setting a column of air in vibratory motion.

1,019,638. Speedometer. Fred B. Healey and Carl S. Homsher, Denver, Colo. Filed May 6, 1911. Serial No. 625,501. Centrifugal force.

1,019,673. Automobile Horn. Robert E. Long, New York, N. Y. Filed Jan. 9, 1911. Serial No. 601,612. Cam operated diaphragm.

1,019,674. Tire Inflation Indicator. Alair Joly de Lotbiniere, Srinagar, India. Filed Mar. 22, 1911. Serial No. 616,112. Piston moved against pressure of a spring by air pressure.

1,019,745. Foot Pedal Switch. John Helstrom, Morristown, N. J. Filed Oct. 24, 1911. Serial No. 656,546. Pedal for operating a spring snap switch.

1,019,755. Brake Drum Protector. Alanson P. Brush, Flint, Mich. Filed Feb. 15, 1911. Serial No. 608,666. Means of lubrication.

1,019,785. Vehicle Chock. William Greenleaf, Bay City, Mich. Filed Nov. 9, 1911. Serial No. 659,384. Means of retaining chocks in position.

1,019,798. Speed Changing Gearing. Edward J. Kearney, Wauwatosa, and Theodore Trecker, West Allis, Wis. Filed July 25, 1908. Serial No. 445,433. Stepped cone gear meshing with pinion.

1,019,800. Carburetter. Richard Kennedy, Chicago, Ill. Filed Aug. 25, 1910. Serial No. 578,903. Pump operated by suction valve for supplying fuel.

1,019,832. Wheel. Wesley Phillips, Cape May, N. J., assignor, by mesne assignments, of one-half to Harry Phillips, Greenwich, Conn. Filed May 29, 1911. Serial No. 630,192. Pneumatic tube supported between hub and rim.

1,019,846. Resilient Wheel. Nicholas Schenck, St. Louis, Mo. Filed Aug. 31, 1910. Serial No. 579,900. Cushion between wheel rim and felloe.

1,019,856. Rotary Internal Combustion Engine. James Locke Strickland, Westport, Nova Scotia, Canada, assignor to Harry Richards McLellan, St. John, Canada. Filed Oct. 19, 1908. Serial No. 458,479. Renewed Nov. 15, 1911. Serial No. 660,470. Trunnioned cylinders, with exhaust ports through the trunnions.

1,019, 943. Adjustable Float Feed. Martin C. Bright, Indianapolis, Ind., assignor of one-half to Charles W. Meikel, Indianapolis, Float swung on eccentric pivots.

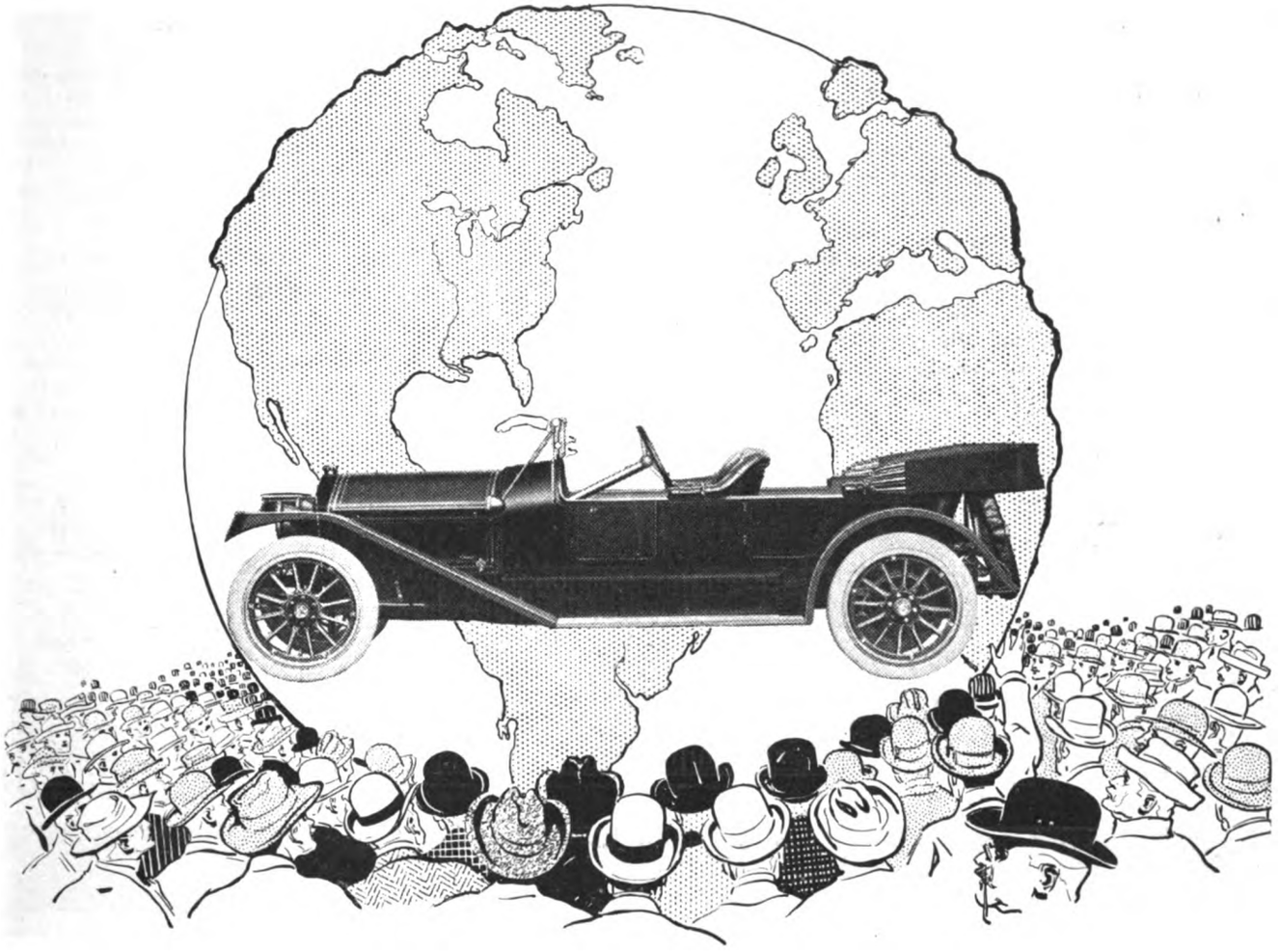
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Gray & Davis Dynamo Electric Lighting System.
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Adequate Baggage-carrying Compartment concealed in body but easily accessible.
Powerful and reliable Brakes.
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Tire Pump, integral part of the motor. Inflates a tire in three minutes.
128-inch Wheel Base.
Adjustable, ventilating and rain vision Wind Shield.
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Silk mohair Top, Cover and Curtains.
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Resilient Springs, ¾ Elliptic in rear; Semi-Elliptic in front.
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and the last work of inventive genius exemplified in this common sense economizer and engine saver.

It is an acknowledged fact that no carburetor, however perfect, can get full power and service out of a given quantity of gasoline.

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The National Compound Mixer and Primer, a small, compact, little instrument, located on the dash, admits air to the manifold, breaking up every drop of gasoline before it enters the engine.

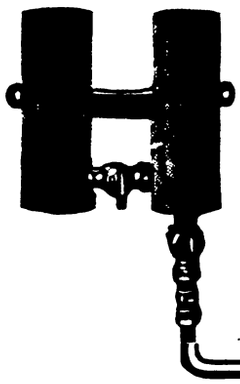
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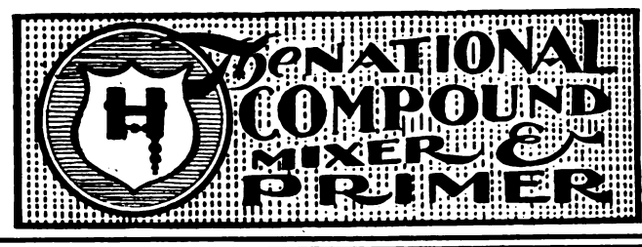
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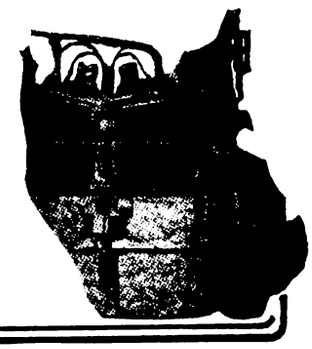
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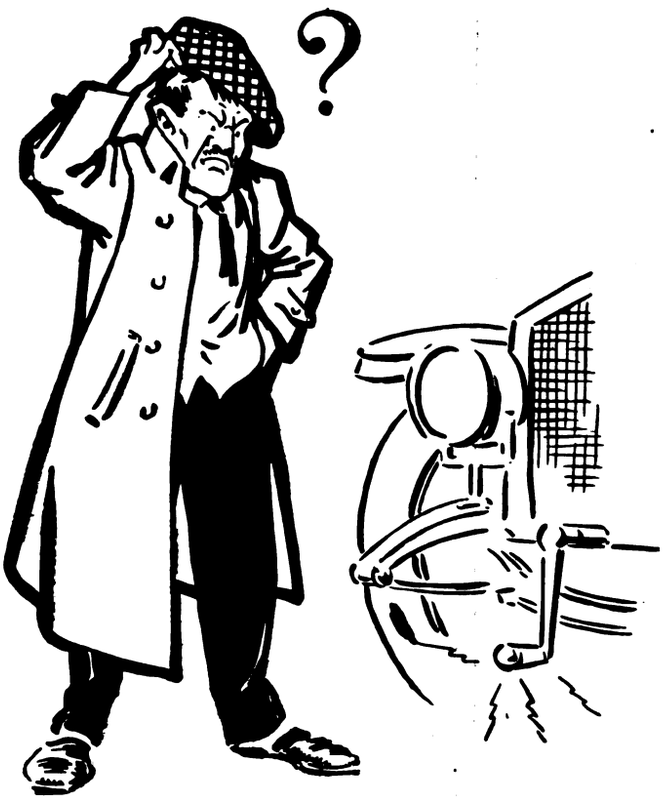
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1913 Motorcycle Shows

and what the Bicycling World and Motorcycle Review will do in connection with them.

New York Show

will be held in connection with the Automobile Board of Trade Annual Show in Grand Central Palace, under auspices of the Motorcycle Manufacturers' Association

January 11-18

We will publish two big issues in connection with this show.

New York Forecast Number
January 7

New York Report Number
January 14

The Chicago Show

will be held at the Manufacturers' Exhibition Bldg., 1319 Michigan Avenue, and will be conducted under the auspices of the Motorcycle Manufacturers' Association

February 3-8

Two special issues will be published descriptive of this show.

Chicago Forecast Number
February 4

Chicago Report Number
February 11

We are ready now to book reservations of space for all or any of the four above described numbers of **THE BICYCLING WORLD AND MOTORCYCLE REVIEW**, and our service department is now preparing copy and sketches for our advertisers' use in these big issues. Each of the Show Numbers will have extra circulation without increase in price of space and our regular advertisers may use extra space on their contracts at minimum rates. This is a splendid opportunity of which the entire trade should take advantage.

Copy and cuts can be handled one week in advance of each publication date, but we recommend reservation now and an early preparation of copy. Can we help you with this copy? And how much space can we reserve?

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1600 Broadway **New York**

New York *and* Chicago

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AMERICA'S FAVORITE FOREIGN CAR SOLD AT AMERICAN PRICES

Lancia cars, made in Europe, offer the American buyer every European point of superiority in material, engineering features, workmanship, design and finish—and it is conceded that car building methods which obtain on "the other side" are years in advance of American methods.

And American Dealers can sell Lancia cars at American prices.

You, Mr. Dealer, know that limited quantity production insures the ***personal attention*** of every man engaged in the building. Lancia production is typically European because it ***is*** limited. Here are no American cut and dried operations that produce quantity at the heavy expense of quality.

Lancia dealers use these arguments as the basis for selling arguments.

Car wise buyers who want European automobiles are quick to grasp and act upon them.

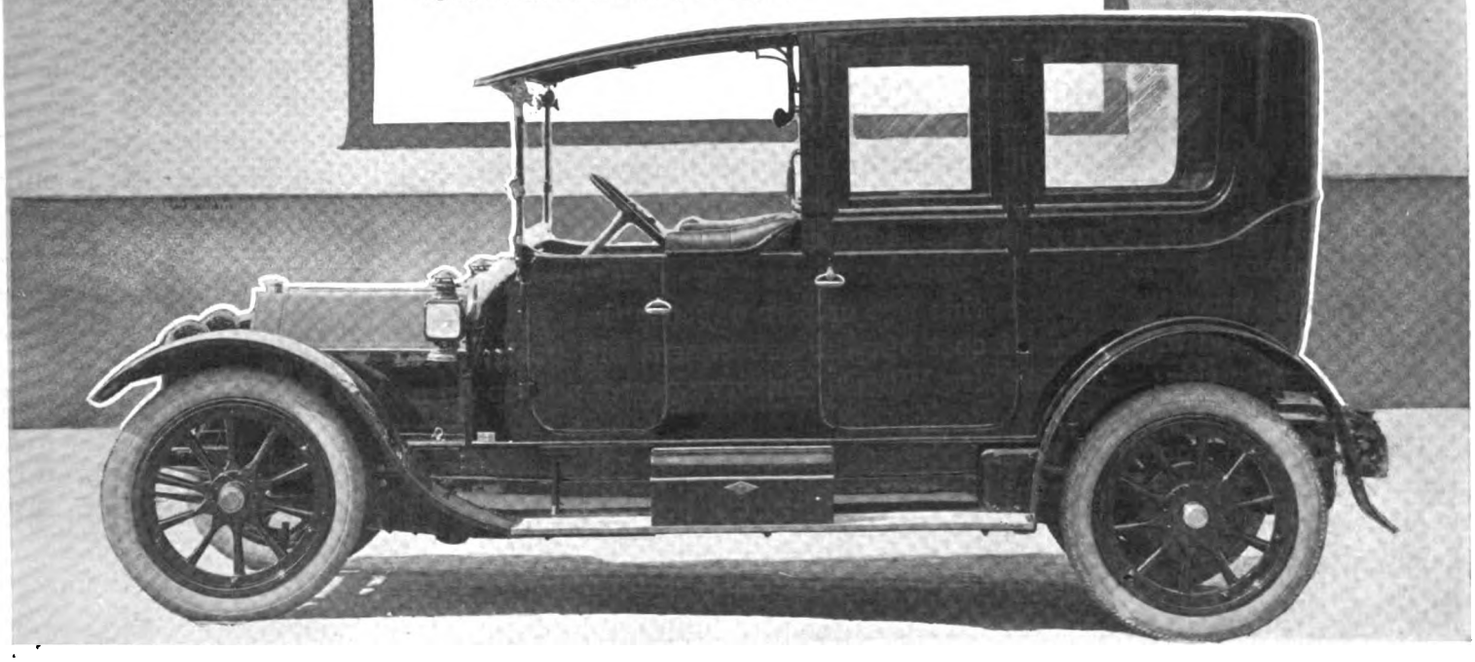
There is some choice territory awaiting dealers who are looking for that ***different and better car.*** Are you such a dealer?

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Since these announcements have appeared in Motor World, we have closed the Pacific Coast Agency with Holmes & Benton of Los Angeles.



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McCUE

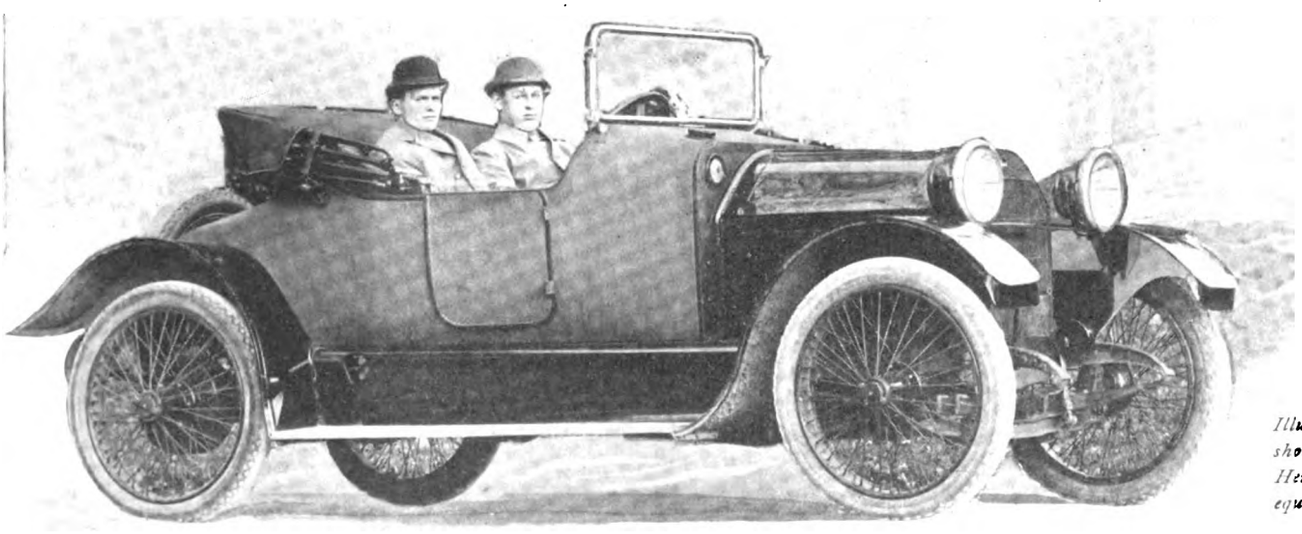


Illustration herewith shows one of the new Henderson Roadsters equipped with McCue Wire Wheels.

In the matter of car equipment, dealers can exercise a dominating force, for it is largely the demands that you make in concert that influences the manufacturer to give your trade what it wants.

As a seller of cars you want the best equipment — you are responsible to your patrons and your success depends upon your ability to furnish cars of service—that is, if you are building for future growth and prosperity.

The lines you represent will sooner or later be equipped with McCue Wire Wheels. It is only a question of time. Economy, safety and common sense demand these wheels. Your good business judgment should make you grasp the significance of the statement.

Wire wheels sell more cars for you, for they reduce that "little old man of the sea"—tire upkeep—to a negligible quantity and it is this tire upkeep expense that prevents thousands of sales—to those who are not afraid of the initial cost but the subsequent big pocket book drain.

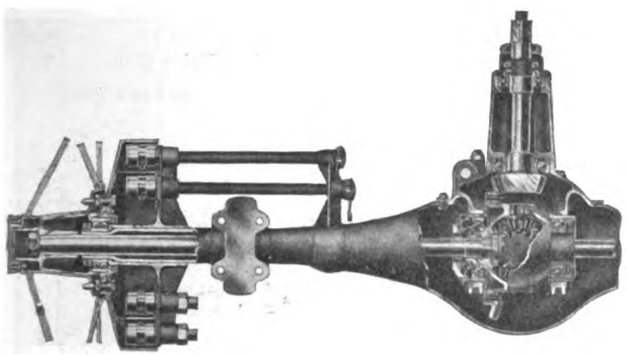
Also consider this: McCue Wire Wheels conserve power and speed and so make a big cut in fuel consumption.

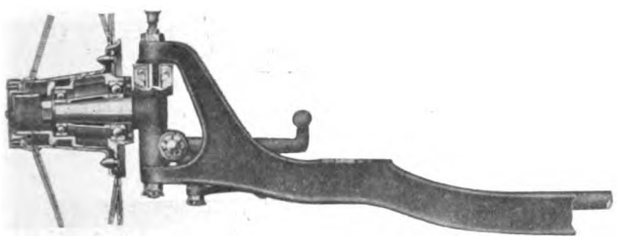
For your own good and in the interests of your trade get in touch with your manufacturer on this important subject. Don't delay and let competition pass you—don't be forced by competition, but keep ahead of it.

Investigate now—get the facts from us, digest them, and go to your manufacturer with them.

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WIRE WHEELS AXLES





McCue Axles are not sold on price—but on merit.

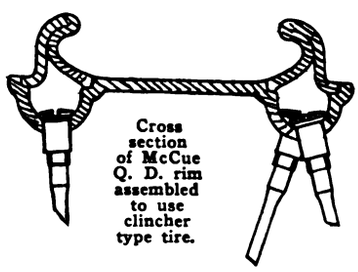
It is conceded that the McCue front axle is the leader —from every standpoint—in the motor car field.

McCue rear axles exemplify the finest engineering skill backed by out-of-ordinary materials and methods of construction. They admit no superior.

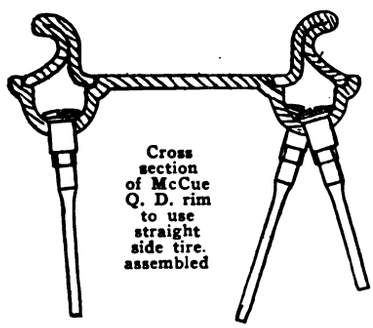
An ideal combination is McCue front and rear axles plus McCue wire wheels. It is a combination that will make one of the strongest selling points any dealer can possibly put forth. However, McCue Wire Wheels are adapted to any axle and not confined to the McCue models.

McCue Wire Wheels May Be Had Equipped With Q. D. Rims

As may be seen by the illustration herewith, the McCue Company is now supplying Q. D. rims on their wire wheels. The general all around advantage of the McCue Q. D. Rim is that that portion of the wheel which is presented to the tire is perfectly smooth and flat. The spoke nipples are inserted in grooves which are rolled into the rim. Just incidentally these grooves add a considerable degree of stiffness to the rim as well as providing a means of preventing the nipple head from coming in contact with the wire. These Q. D. rims, of course, are furnished on the detachable wheel. Another point very much in favor of McCue Q. D. Rims is that by simply reversing the position of the rings the same set of rims may be used either for straight side tires or for the clincher type.



Cross section of McCue Q. D. rim assembled to use clincher type tire.



Cross section of McCue Q. D. rim to use straight side tire. assembled

THE McCUE COMPANY
Buffalo, New York

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"THE NEWTONE"

Motor Horn



THE HOME OF THE NEWTONE

Manufactured and guaranteed by the largest auto horn maker in the world.

A concern that has made and sold over **one million auto horns** in the last seven years.

The following is an affidavit sworn to before a Notary Public by Helen L. Hicks, billing clerk of this concern :

Helen L. Hicks, of Borough of Brooklyn, City and State of New York, being duly sworn, deposes and says that she has been employed by the Automobile Supply Mfg. Co., a domestic corporation, for about two years, last part in capacity of billing clerk and general office work and that she is familiar with the shipping slips, shipping books and bill books.

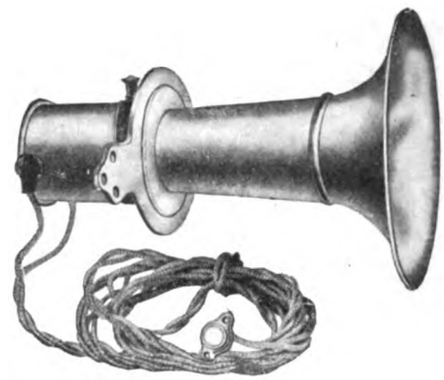
Deponent further states that she has examined said books and same show that in the month of May, 1912, the Automobile Supply Mfg. Co., shipped

19,049 Bulb and Electric Horns of different sizes and types.
In June, 1912—17,028 Bulb and Electric Horns of different sizes and types.
In July, 1912—22,006 Bulb and Electric Horns of different sizes and types.
In Aug., 1912—19,866 Bulb and Electric Horns of different sizes and types.
In Sept., 1912—22,156 Bulb and Electric Horns of different sizes and types.
In Oct., 1912—26,103 Bulb and Electric Horns of different sizes and types.

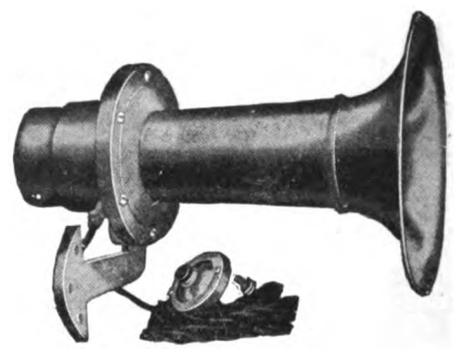
Sworn to before me
this 8th day of November, 1912. (Signed) HELEN L. HICKS.

(Signed) ISAAC BROWN,
Notary Public, Kings Co.

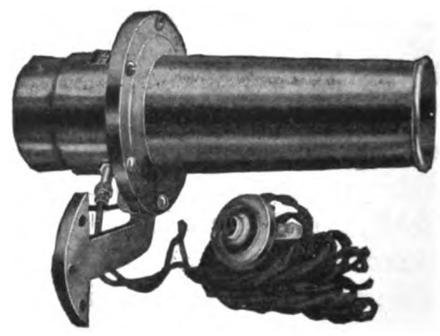
(The original of the above affidavit is on file in the office of this publication.)



Newtone Superior, Price $10
The Cheapest Yet Most Efficient Motor Horn



Type M, Price $20
A Wonderfully Good Horn at a Reasonable Price



Torpedo, Price $20
The "Mile Away" Electric Horn

Thousands upon thousands of Newtone Horns are now in daily use and our factory is working overtime. Arrangements are now being made to increase our output.

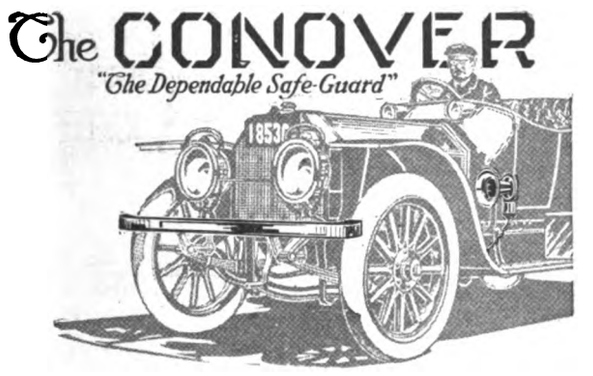
Send for Our Catalogue

Automobile Supply Manufacturing Company

220 Taaffe Place **BROOKLYN, N. Y.**

Digitized by Google

The Conover *adds Class to the appearance of any Car.*



A BROAD, FLAT CHANNEL-BAR—rather than a tube—and of far greater resistance-strength; supported at four points by semi-elliptic steel springs; guaranteed unrestrictedly for two years against any contingency that may arise.

Best quality Steel, heavily enameled in Black, Royal Blue, French Gray or Maroon. One size only: bar 2 inches wide - - **$15.00**
(Any other color of enamel $5.00 extra)

Best quality Steel, Brass or Nickel plated. One size only: bar 2 inches wide - - **17.50**

Solid Bronze finished in either Brass or Nickel. Two sizes: bar 2 or 2⅜ inches wide **25.00**

BUT its big value lies in its *protective-power.*

Its ability to prevent annoying and expensive mishaps to the exposed front parts of your car.

Your insurance covers damage of more than $25.00. The Conover prevents this. Furthermore, it prevents damage of a lesser extent—*not* covered by your insurance. And in neither case must you wait for the car to come from the repair shop.



LOVELL-McCONNELL MFG. COMPANY
Sellers :: Newark, N. J.

NEW JERSEY TUBE COMPANY
Makers :: Newark, N. J.

CONOVER

"The Dependable Safe-Guard"



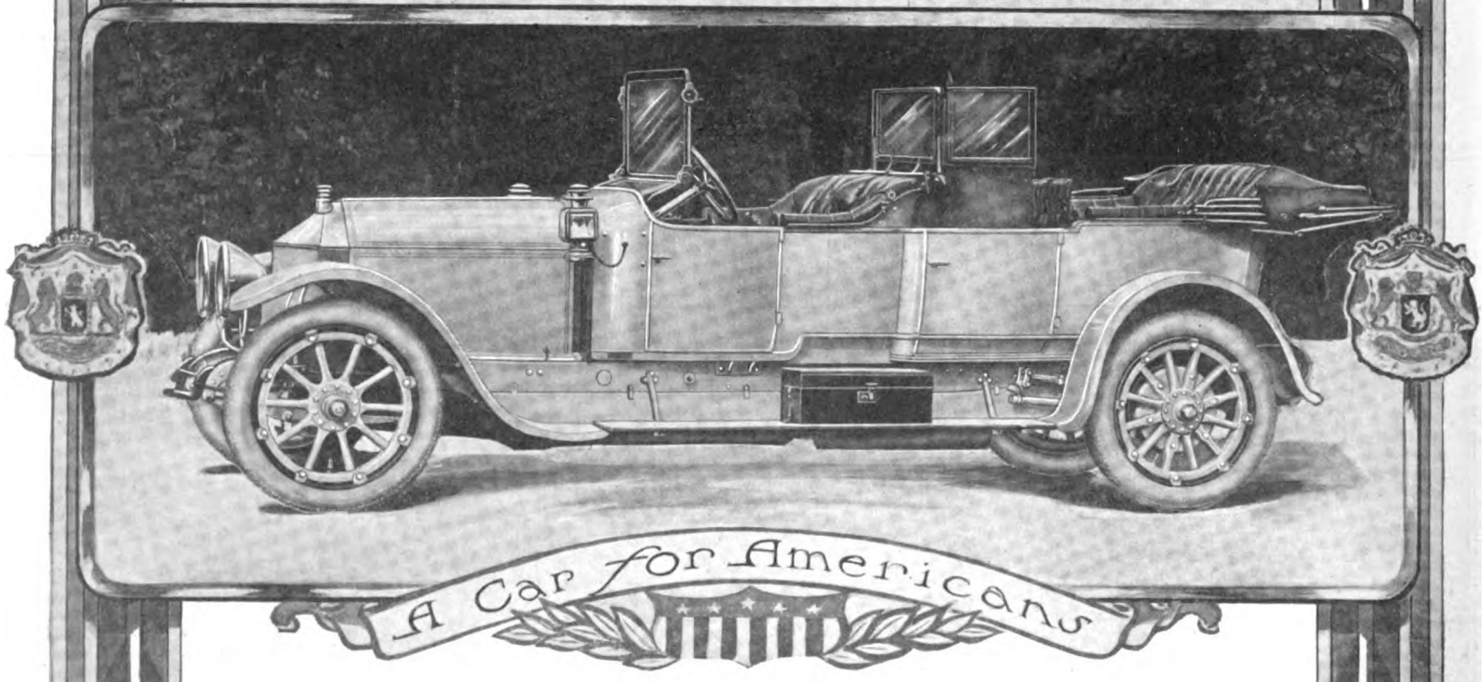
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METALLURGIQUE

LIMITED IN QUANTITY
UNLIMITED IN QUALITY

DEALERS

Discriminating Men of Means Want These European Models of Prestige and Performance



A Car for Americans

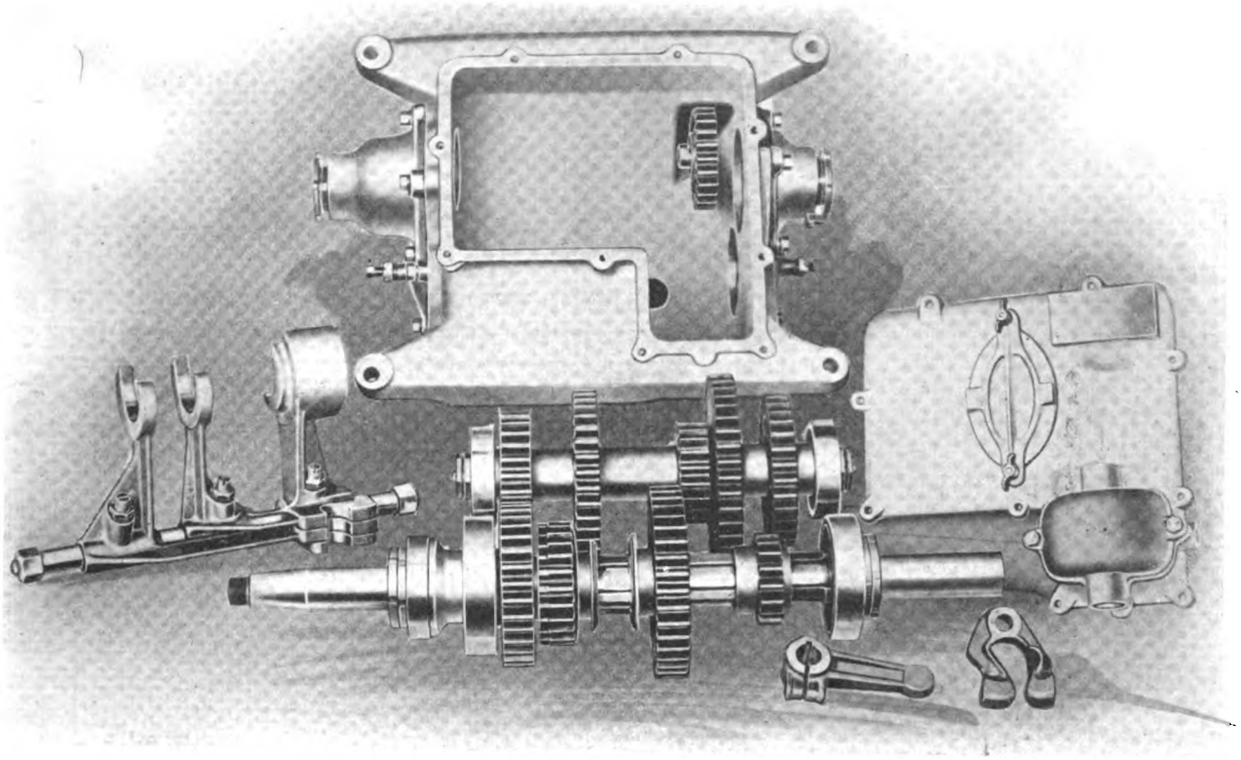
A few years since the ownership of a foreign car seemed a remote possibility to the "classes." Foreign design and workmanship were not understood—or appreciated—prices seemed out of reason.

Today, the demand for European cars is on the increase—Metallurgique, the aristocrat of Europe, is leading the foreign group—and this is just the logical result of our dealers' confidence in this—a car of rare worth, of service, power and speed, coupled with unique lines that spell to the eye "From Europe."

You, Mr. Dealer, have prospective buyers for this car. There are always men who appreciate foreign products for their true worth and exclusiveness. Now, just think this over. Locate the prospects and write to us. We will help you sell the Metallurgique.

METALLURGIQUE MOTOR CO., 1934 Broadway, New York City

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Pullman

Four-Speed Transmission

The design and care in the manufacturing and testing of the four-speed Pullman transmission, shown herewith, is another one of the strong sales points for Pullman cars.

The transmission case is cast in one piece. This gives rigidity, uniformity and extreme accuracy. The gears are very large in size, which fact minimizes the teeth pressure and insures better lubrication under full load conditions. All shifting forks work on one shaft which fact makes the construction extremely simple. All transmission bearings and gears are lubricated by light grease contained in the gear case.

After being assembled, prior to which each piece has been carefully tested, the transmissions are run on a testing bench for at least 20 hours. This enables the grinding in of the gears to a nice polish. The transmissions are then taken completely apart, inspected and carefully cleaned in gasoline—after which they are re-assembled.

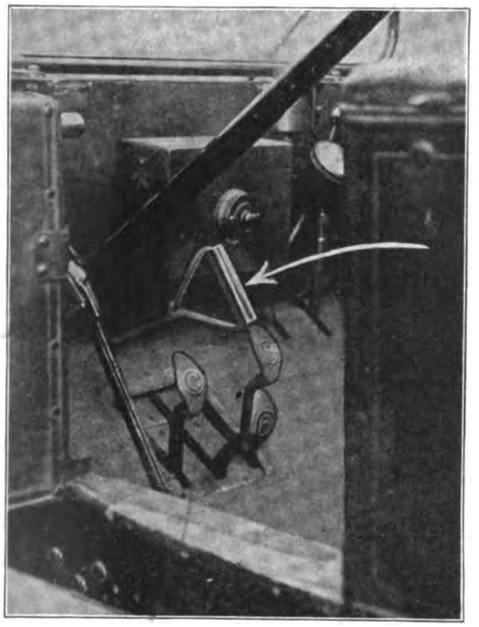
In subsequent advertising we will go into the question of the heat treatment of these transmission gears which is one of the important features of Pullman transmission construction.

If you are looking for a continuous money-making agency, get in touch with us.

PULLMAN MOTOR CAR COMPANY, York, Pa.

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The Triplex Ford Engine Starter



How Are Your Ford Cars Started?

DO YOUR OWNERS STILL STRADDLE THE BUMPER AND CHURN THE CRANK?

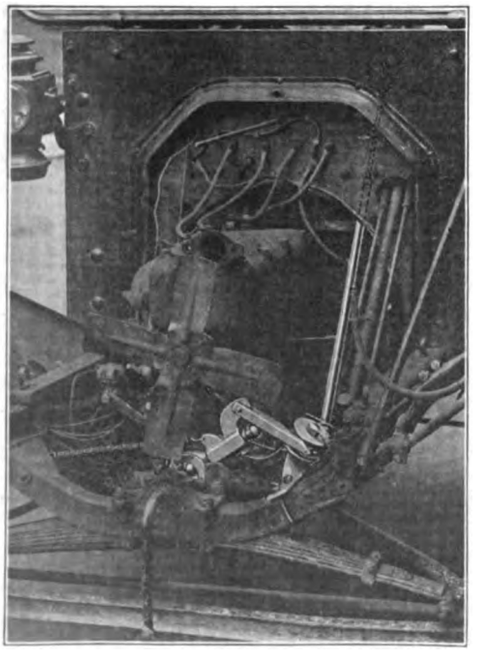
You Will Give Them This Message if You Appreciate the Unequaled Advantages of Starting the Ford Car With the TRIPLEX ENGINE STARTER.

The TRIPLEX FORD ENGINE STARTER is a mechanical starter, which, of all types—compressed air, acetylene gas, electric and spring—is the only one on the market which at all times proves absolutely RELIABLE. In no respect is it a "Hit-or-Miss" proposition—working one minute and short circuiting or blowing out a cylinder head the next. It gives 100 per cent. uninterrupted service from the time it is attached. It comprises so few parts and is so simple and direct in application that it cannot get out of order, and it is as safe and durable as it is simple and effective.

You do not have to leave your seat to start the Ford Motor, WHEN EQUIPPED WITH THE TRIPLEX STARTER.

All that is necessary is to pull the lever. Will absolutely start the Ford 1,000 times out of 1,000.

Can be easily attached in one hour's time. Absolutely no holes to drill or mechanical work necessary to install same. Absolutely guaranteed to outlast the motor.



DEALERS: It doesn't require SALESMANSHIP to sell an ARTICLE for which every FORD OWNER is clamoring. Bring the TRIPLEX FORD ENGINE STARTER AND THE FORD OWNER together and a sale results.

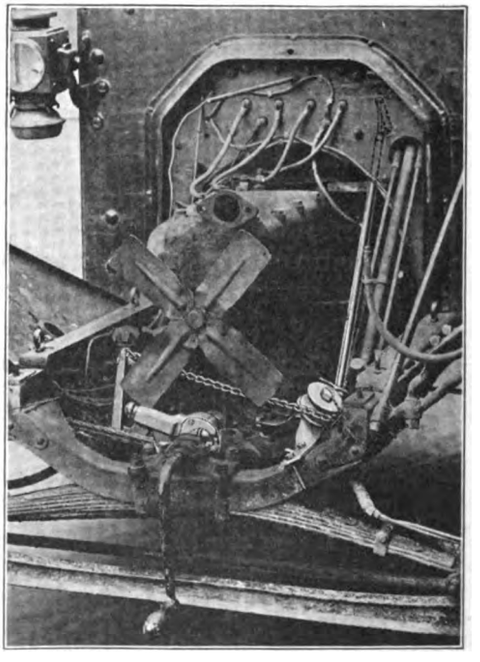
Price $11.50

Your Commissions Are Liberal

BREMER - WILSON MANUFACTURING CO.

1256 Michigan Ave., Chicago, Ills.

Western Representative,
AUSTERMELL & HANSON,
560 Phelan Bldg.,
San Francisco, Cal.



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ZENITH
Carburetor

At the Olympia Show

Out of 132 makes of cars, more than 29 per cent. use Zenith Carburetors. The next best appeared on only 13 per cent. of the cars exhibited.

Zenith has been known in Europe for six years. The record of the Olympia show demonstrates its high standing among the best European makers.

Zenith Gives Standard Carburetion

ZENITH CARBURETOR COMPANY
Detroit, Michigan



GILMER TIRE REPAIR PLIERS

We are just about keeping pace with the tremendous demand for this "worth its weight in gold" little instrument, and so we can still fill your orders with reasonable promptness—if you don't delay.

You have read about this device. You must know how simple it operates—how positive are the cures it effects and how valuable it must be to the man who owns it. It is largely up to you, then, to help your trade in this tire upkeep matter—and you can do it by recommending Gilmer Tire Repair Pliers.

The operation of sealing up cuts and abrasions is simple. Just insert the prongs of the pliers into the injury, spread the pliers, throwing the ratchet lever to center when it locks. Then clean the wound, insert pure rubber gum and reverse the operation of opening. Then the tire will close **over** and **around** the gum, producing a permanent repair.

Remember, Gilmer Tire Repair Pliers sell for $1.00, and to see them is to want them. It is only necessary for you to demonstrate their worth in order to make sales, and in the doing you not only reap a good profit but also make a firm friend of the man you are helping to save dollars.

Send your order today.

G. WALKER GILMER, Jr.
52 North Seventh Street **Philadelphia, Pa.**

GILMER TIRE-REPAIR PLIERS
PATENTED TRADE MARK

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It takes little talk and little argument to convince the most skeptical that the Warm Hand Wheel is the most logical, common sense improvement in the automobile lield today.

It is only a question of you, Mr. Dealer, placing yourself in the position of those of your customers who drive in winter. Figure out how desirable this comfort-giving wheel would be to you.

Just look at it from their side of the fence. Don't you think they will be glad and eager to equip with a device that will make winter driving a positive pleasure by keeping the hands as warm as toast under all conditions of cold.

You must realize that if you do not grasp this selling opportunity now, your territory is bound to be invaded sooner or later by some more enterprising dealer who can see the sales possibilities that lie in the Warm Hand Wheel.

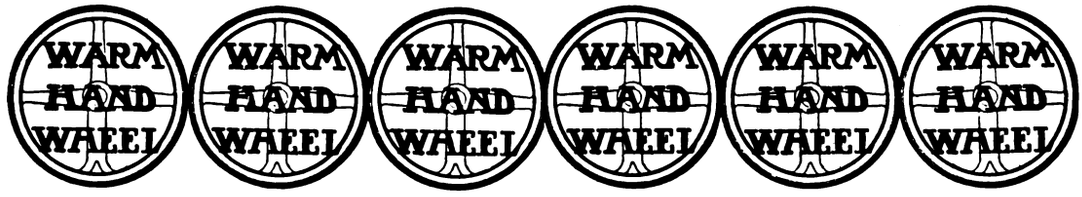
The Warm Hand Wheel can be installed by you quickly and without interfering with any of the working parts of the car. Once installed it remains, year in and year out, a source of comfort and satisfaction to the man who owns it.

That is the whole story.

Write today and get our proposition to you. Remember that the Warm Hand Wheel sells for $15 and offers you an opportunity to earn a liberal commission—more important, it will keep many cars on the road through the winter that would otherwise be housed—a matter of more sales through the dull winter months to you, as your own good business judgment will tell you.

The Warm Hand Steering Wheel Company

527 Fifth Avenue **NEW YORK CITY**



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THE present demand for self-starting and lighting equipment has created a demand for an ignition system capable of producing a hot, dynamic spark independent of the engine speed.

This demand is being successfully met by

The Atwater Kent Ignition System



the starting button of which produces, not a few weak sparks, but a single heavy flame-like spark, thus insuring at all times the perfect ignition of any mixture that will burn.

Other salient features of the Atwater Kent System are the extreme simplicity of mechanism, only three moving parts, one contact, one adjustment and one non-vibrating coil.

While the Atwater Kent System is high in value and reputation, it is not high in price. In fact, it will cost less than half as much as a good magneto and will give superior results at a much less cost of upkeep.



We can now furnish two types of the Atwater Kent System for use on cars as sole ignition in place of the magneto, in conjunction with lighting and starting equipment.

***Type "F"* without Automatic Spark Control.**

***Type "K"* with Automatic Spark Control and insulated primary circuit.**

No matter what the requirements, the Atwater Kent System of Ignition affords ideal ignition.

Write today for detailed information and illustrated booklet "D."

ATWATER KENT MFG. WORKS

4930 Stenton Ave. Philadelphia, Pa.

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Dorris
Built to last



ELECTRIC LIGHTING
SELF STARTING

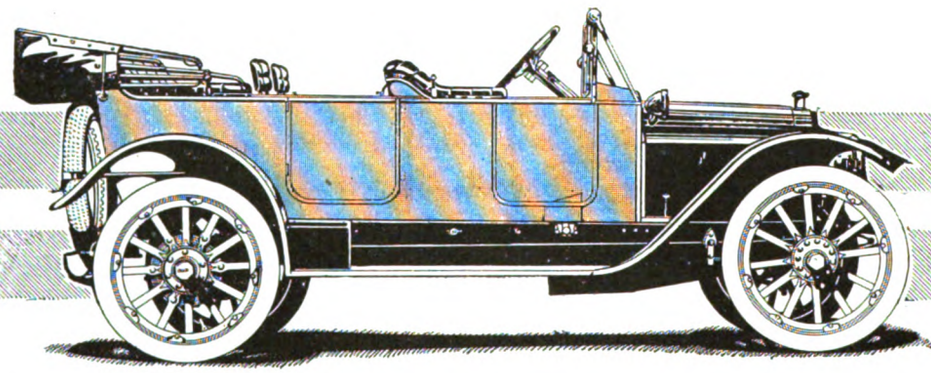
Through eight years of unbroken success the sales of

Dorris Motor Cars

have grown steadily of their own momentum—**like a snow ball rolling down hill.**

The Dorris is a seller and a repeater—a car of unlimited satisfaction, of Maximum service at a Minimum cost—elcctrically self-started and lighted, with all modern refinements of finish and appointments, and the perfection of detail which marks a car of the highest quality.

It shows its exceptional value and ability most under the hardest use in comparison with other machines. It always receives a boost from the owners and wherever it is fairly introduced it takes possession of the territory and dominates the market. In short, it's a car on which to build **permanent,** unlimited success.

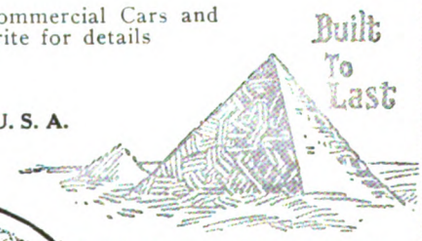


With a new factory more than doubling our capacity we are this year ready to **materially** extend our field.

And for a limited number of progressive dealers in some of the richest motor car territory of the country, we have a proposition of such unusual attractiveness that no live dealer can afford not to know about it.

If you are an established dealer, we can show you the way to a bigger, more stable and more profitable business. If you are not yet in this greatest business of the age, but like motor cars and have energy, ambition, perseverence and a clean record, we will show you the way to bigger and surer rewards for your time and labor than in any other stable business in America today.

We manufacture a complete line of Pleasure and Commercial Cars and can make you a wonderfully interesting proposition. Write for details today.



DORRIS MOTOR CAR CO.

Sarah and Laclede Streets **St. Louis, U. S. A.**

Dorris
Built to last

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"Little Knox Six"

Commands Attention

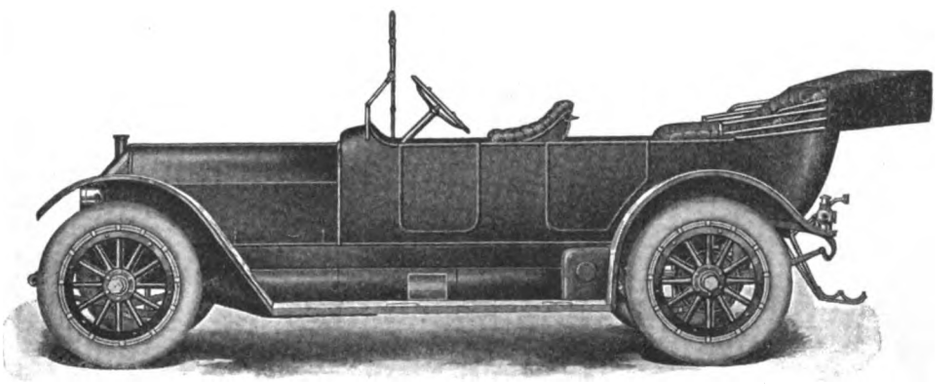
Arouses Enthusiasm

Silences Competition

Passes them all.

Made in New England

at Springfield, Massachusetts

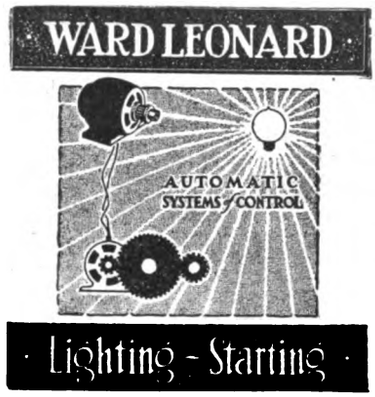


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WARD LEONARD WARD LEONARD

WARD LEONARD WARD LEONARD

The Ward Leonard System *for* LIGHTING and STARTING



A Guaranteed Success

As far back as 1889, Ward Leonard Lighting Systems were used as pioneer installations in the line of dynamo lighting systems for moving vehicles. The batteries in these systems were "floated on the line" and "automatically controlled" just as is necessary in the case of motor cars.

Ward Leonard Electric Self Starters for automobile gas engines have been in use longer than the motor cars of nine-tenths of the manufacturers now prominent in the automobile industry.

The present Ward Leonard Dynamo Lighting System represents the evolution of numerous successive inventions, covering a period of 17 years. In 1905, a patent application covering the modern type of Ward Leonard Dynamo Lighting System was filed in the United States patent office. This patent was granted to H. Ward Leonard on November 5, 1912.

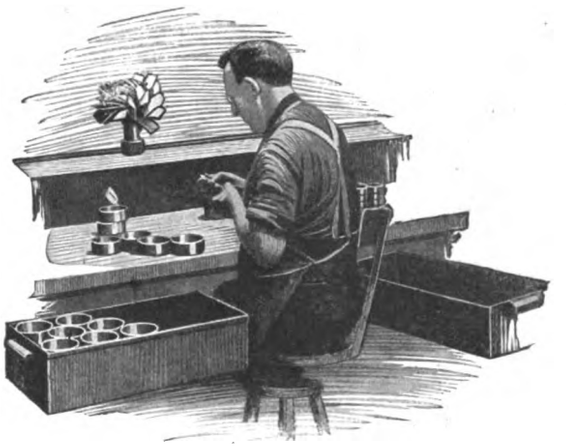
These are but a few facts to prove that we were in the game early. The designs of our systems are based upon fundamental truths, and for many years we have aimed at simplicity of structure and perfection of automatic control. Time will tell whether systems not based on scientific principles can live.

WARD LEONARD ELECTRIC CO.
BRONXVILLE, N. Y.

WARD LEONARD WARD LEONARD

WARD LEONARD WARD LEONARD

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Sign of the bright red tag

¶ On the bench of each inspector is a rack full of crimson tags.

¶ Danger signals to be tied on every piece not made *exactly* to specifications; warning tags to insure that no imperfect parts shall enter the finished bearing.

Timken Tapered  Roller Bearing

¶ Here's a red-tagged 'cup' marked 'small O. D.'—date—name (Griffin) of the man who ground it. An inspector (Will Keyser) has found it to be half the thousandth part of an inch too small in outside diameter.

¶ So he tagged it red and sent it along, with other tagged parts, to the 'morgue.'

¶ 'Morgue' is the name Timken shop men give to the place where rejected parts go. It's the morgue man's task to break up those parts so they never can come, by possible chance, into use in the Timken Bearing.

¶ Twelve operations make the part called the 'cone.' Twelve inspections are given to *know* each dimension, each angle, is right. Let the slightest error occur at any step of the way—an inspector will spot it and—tie on the red tag quick!

¶ Long before such care was used, the Timken principle of tapered rollers revolving between a tapered cup and a tapered, two-ribbed cone gave a unique type of bearing that won marked success over all other kinds.

¶ In the years that have followed, Timken care *in every detail* of the making has added a hidden value that's only revealed in a life-time of good service.

The Timken Roller Bearing Company

Canton, Ohio, U. S. A.

The only axle manufacturer licensed to make automobile axles equipped with Timken Roller Bearings is the Timken-Detroit Axle Company

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BUFFALO ELECTRIC FOOT CONTROL

THE driver of a *Buffalo Electric* has no burden placed upon the active or voluntary part of his brain in operating the car. The foot control requires no conscious effort—starting or stopping the car is as involuntary an effort as walking.

Any element in motor car construction which compels the car to obey an unconscious wish, as does the *Buffalo Electric's* foot control, stamps the car possessing that advantage as years ahead of the ordinary electric vehicle practice. *Buffalo Electric* foot control leaves both hands free to guide the car, and the mind is free to absorb and deal with conditions as they arise.

Exclusive patent rights restrict the use of foot control to *Buffalo Electrics*. It is simple and absolutely efficient. The best use of the hand-lever is to govern the maximum flow of power for your requirements—forward or reverse. When depressed, the foot pedal cuts off the flow of power and automatically applies the service brakes, independent of hand control. When raised, the service brakes are released and power applied gradually until its full flow is felt. Just the same as in walking, you lift one foot to make your first step, putting down both feet to stop.

Practical benefits of *Buffalo Electric* foot control have a dominating appeal to those who drive their own car. Its usefulness is most apparent in town or city driving.

DEALERS

Buffalo Electric foot control is but one of several features any one of which is of sufficient practical value to insure public endorsement of the car. Single reduction, direct shaft drive, caster steering effect, and other features all in the same car make *Buffalo Electrics* the most valuable asset to your field of endeavor. Write for full particulars.

BUFFALO ELECTRIC VEHICLE COMPANY

FACTORY AND GENERAL OFFICES

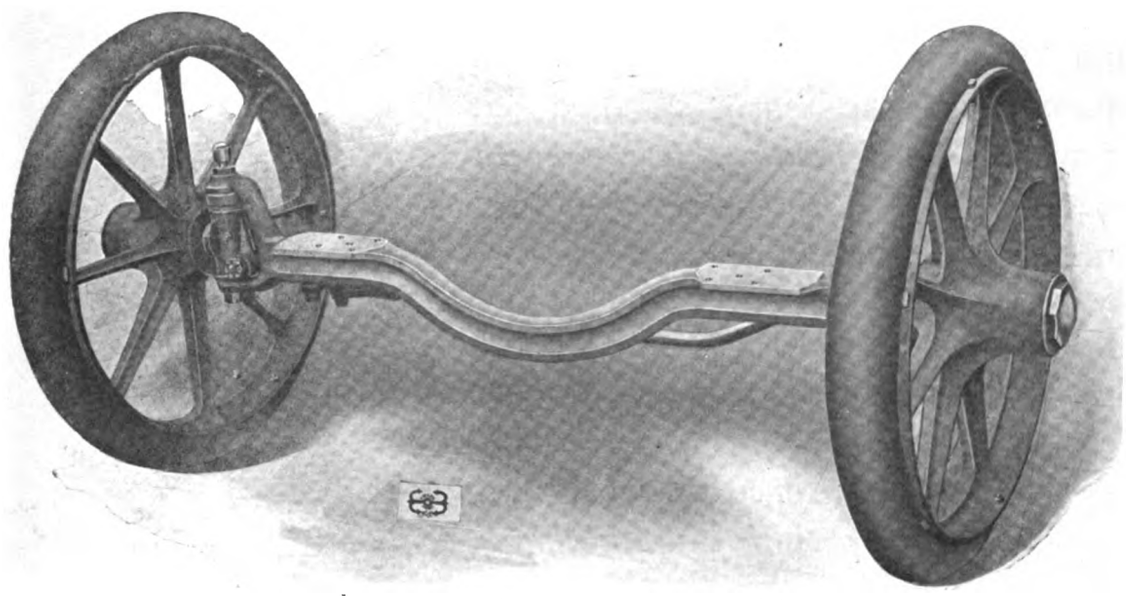
1222 MAIN STREET, BUFFALO, N. Y.

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SHELDON
1913
ONE TON EQUIPMENT

Consisting of

3-F-A-1 Front Axle and R-A-1 Rear Axle
E-11 Brakes J-1 Jackshaft
Is Now Ready



Sheldon One Ton Front Axle 3-F-A-1 with Steel Wheels. One Piece I-Beam center, with integral spring pads. Steel Wheels, 4 times stronger than wood wheel, and 20% lighter.

BEARINGS

Standard Taper Roller — **New Departure Double Row Annular**
Bower Straight Roller — **Rhineland Double Row Annular**
All are interchangeable with our steel wheels or hubs

SHELDON AXLE COMPANY, Wilkes-Barre, Pa.

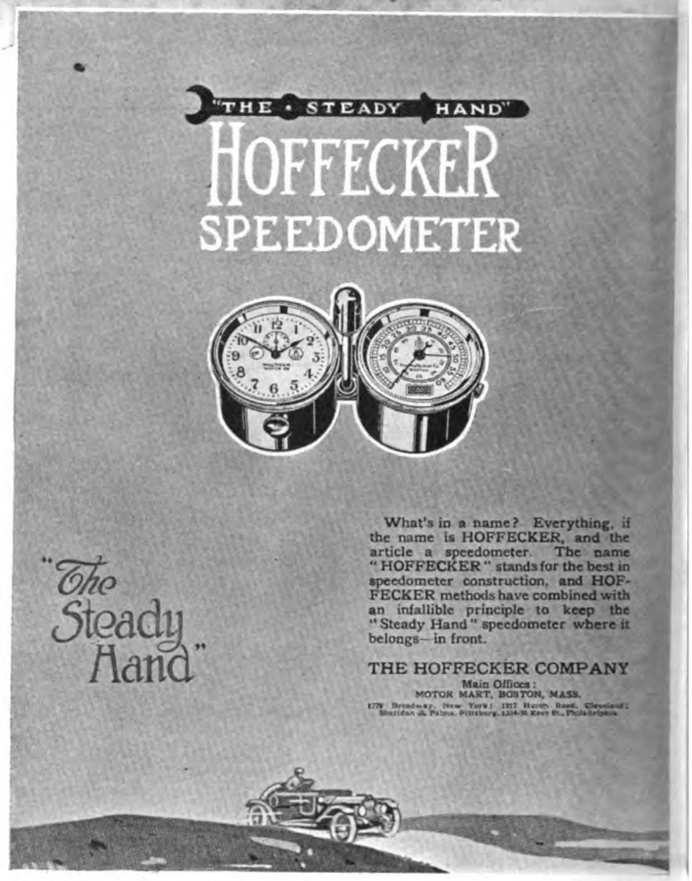
CHICAGO OFFICE
68 East 12th St.

DETROIT OFFICE
1215 Woodward Ave.

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HOFFECKER'S SPEEDOMETERS

THE QUALITY THAT CAR DEALERS-MANUFACTURERS



The name "Hoffecker" on a speedometer and "Waltham" on a timepiece stand sponsor for quality that is standard and of world-wide reputation. Car owners who read and reason before they buy, ***know*** this quality and ***demand*** it.

No enlargement on the prestige of the Hoffecker and Waltham products is necessary here. This has been established through years of consistent service. It is rather the present intent to ***show how*** it is commercially possible to produce these instruments of precision and durability at prices within reason.

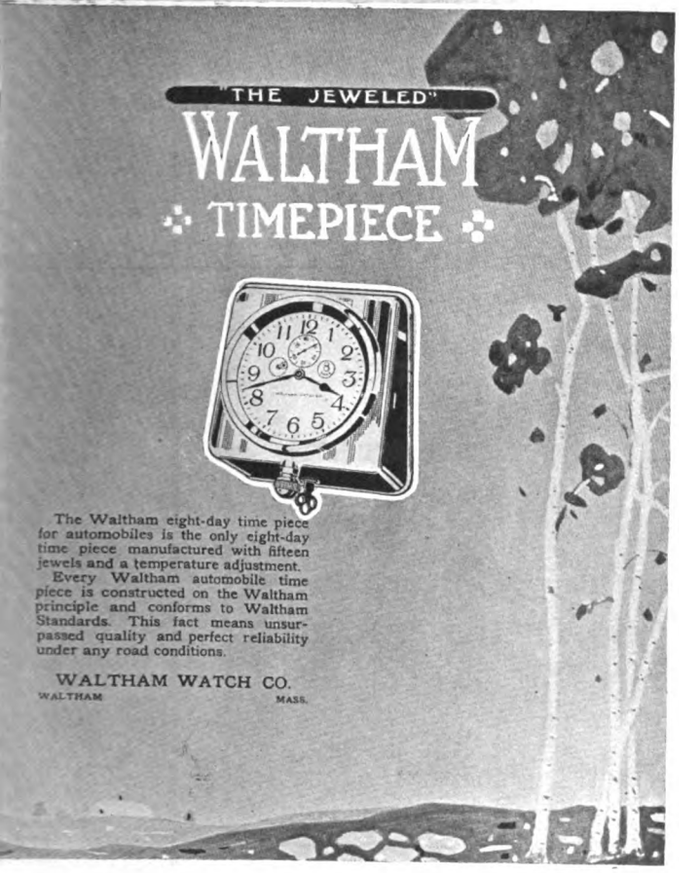
Hoffecker speedometers and Waltham timepieces have never been extravagently exploited. They have never had quality sacrificed to meet tremendous advertising overhead expense. They embody sterling worth in material, fine workmanship and finish, ***made possible only by the money that goes right into the instrument—not into indiscriminate waste publicity.***

Of course, they ***are*** advertised, but

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COMBINATION OWNERS DEMAND WALTHAM TIME PIECES

READ THE MESSAGE



always on the "bull's eye" basis, and with no "scattering fire" effort. This publicity has value plus—for the car manufacturer, the dealer and ourselves. Read why. The double-page reduced advertisement shown here, is typical of Hoffecker-Waltham advertising, current in ***Motor, The Automobile*** and ***Motor Age***—three papers that practically cover the cream of car owners who, as readers of these publications, are qualified to recommend and buy intelligently. In brief, this group constitutes a buying and selling force in the field. Through reading and observation, they recommend the best to others and demand the best for themselves.

"Hoffecker-Waltham" is a combination that ***your*** trade wants. It is a combination that will make a good car better, lessen resistance and increase your prestige in your community as a dealer who is known as a believer in standard, dependable merchandise. In all probability the cars you sell ***are*** so equipped—if not, then get all the facts from us—you may be able to help your customers to more and better service.

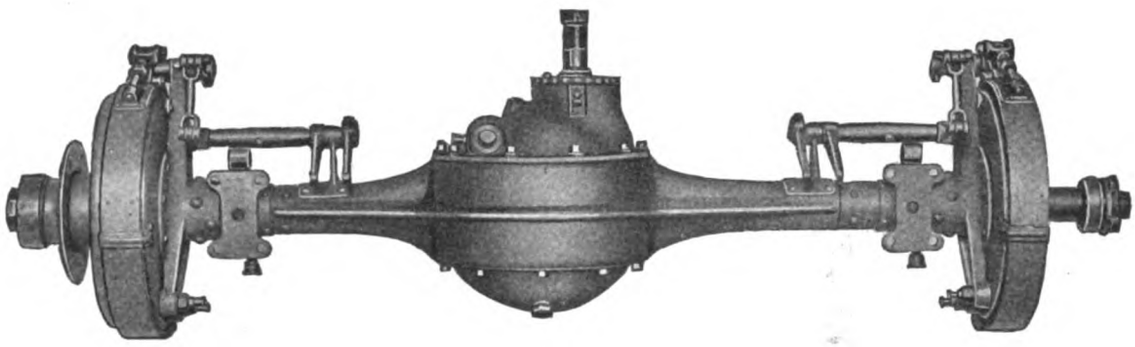
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Transmit More Power Because They Have Least Friction



The electric car axle problem is wholly one of friction.

That axle is best which takes the least current to overcome the inertia of its own parts.

Choice of materials—perfection of design—refinement—exactness—all enter into the fight to get the precious power to the wheels.

American Axles have proved their superiority so completely that they have been supplied to 80 per cent. of all the electrics in America.

The option of Bevel Drive or Lanchester-Daimler Worm Gear can be had with American Axles only.

THE AMERICAN BALL-BEARING CO.

Edgewater Park and L. S. & M. S. Ry. CLEVELAND. OHIO

American

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AUTOMOBILE AND MOTOR BOAT SHOWS

We are now collecting data for our 1913 Annual Catalog, which will contain 256 or more pages and will have a circulation of not less than 100,000 copies throughout the world.

Manufacturers of ACCESSORIES, who are making Parts, Fittings and Sundries for use on Automobiles, Motor Boats, Motorcycles or Aeroplanes, are requested to send us catalogs or circulars and make us a proposition regarding cataloging and handling their material, and, in quoting us, please take into consideration the fact that we have **Fourteen Branch Stores** and quote our prices F. O. B. Each Branch.

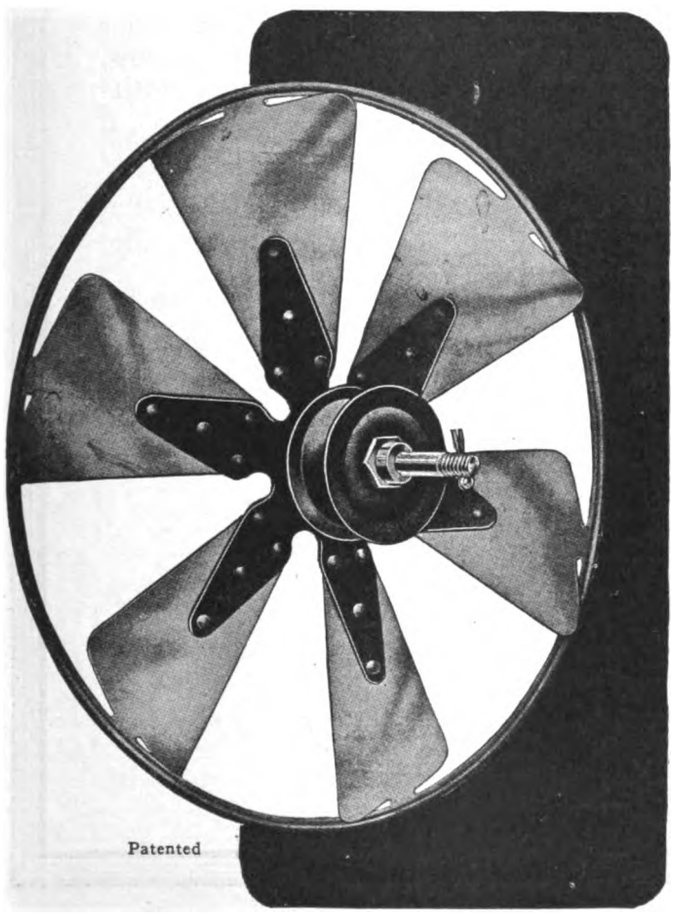
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All made with the Hayes quality and promptness which have never been questioned

Why not lower costs and increase production by using HAYES sheet metal parts?



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We can do this because we have the organization; the two enormous specialized factories; and because we are the largest users of sheet metal in the world.

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Mayo Radiators

¶ A Mayo Radiator on any car is an ear mark of quality that presupposes quality of the whole machine. Leading car manufacturers know this and equip accordingly.

¶ In all probability the cars you sell are so equipped. If they are, then use the argument—it is a good one, because the car buying public has been largely educated in the quality of Mayo products.

¶ An inefficient radiator will spoil a good engine—a Mayo Radiator, designed and built along modern scientific lines, will make a good engine still better. The proof lies in past performance.

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Mayo Radiator Co.
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Mr. Automobilist:

Your tire maker is very anxious to impress upon you the importance of

Tires Inflated to the Right Pressure

He insists that this is tire economy and

Saves You Money

How do you know what pressure you have in your tires? A

SCHRADER
UNIVERSAL
Tire Pressure Gauge

(Trade Mark Registered in U. S. Patent Office)



(Patented March, 1898—Other Patents Pending)

will tell the exact pressure in your tires at any time, day or night, by simply holding this Gauge to your Valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the Gauge can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the Indicating Sleeve can be pushed back into the Gauge with your finger. No catches or snaps to operate or get out of order. This Gauge is 2½ inches long over all, short enough to apply easily to the smallest diameter of wheel and can easily be carried in the vest pocket or the change pocket of your trousers.

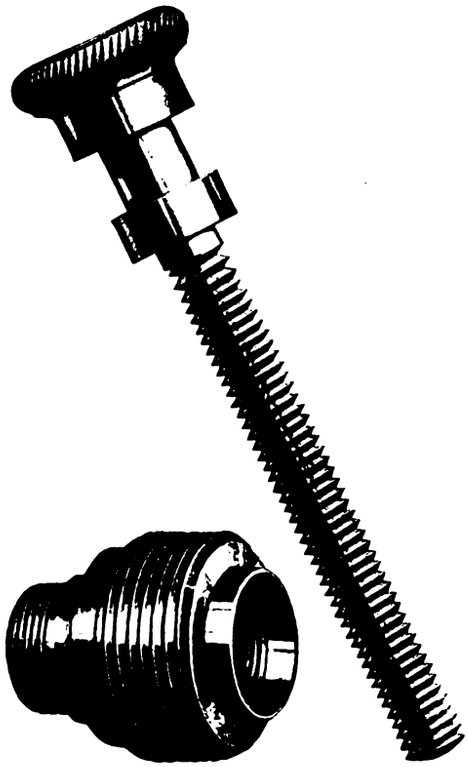
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Your assemblers are the best judges of the quality of screw machine work. Their efficiency depends upon good fitting product, and good assemblers appreciate that kind only.

Acme milled parts have proved their quality to assemblers. The threads are clean cut and up to size, making the handling easy and the fit snug.

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Put a poor tire on a good automobile and you get—a poor automobile.

The serviceability of a motor car is measured more than anything else by the serviceability of its tire equipment—just as a soldier's efficiency depends more on his feet than on his marksmanship.

Kelly-Springfield Automobile Tires have behind them seventeen years of rubber tire making experience. What these seventeen years stand for is shown pretty clearly in the fact that the average mileage given by Kelly-Springfield Tires exceeds by a thousand or two the average mileage given by tires of other makes.

And tire mileage means car mileage.

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Our new addition is ready for occupancy.
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Wire for reservation at our expense.

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Do you know the standard of service Tires ought to give, and whether or not yours have measured up to that Standard? The AJAX Standard is 5000 Miles—1500 miles more than others.

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Guaranteed 5000 Miles

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AJAX are the longest wearing tires in the world. They stand up under the most trying conditions. Don't take our word for it, or the word of the thousands who are using AJAX—try them yourself. OUR 5000 MILE GUARANTEE ACCOMPANIES EVERY TIRE.

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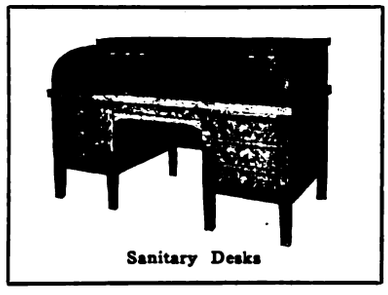
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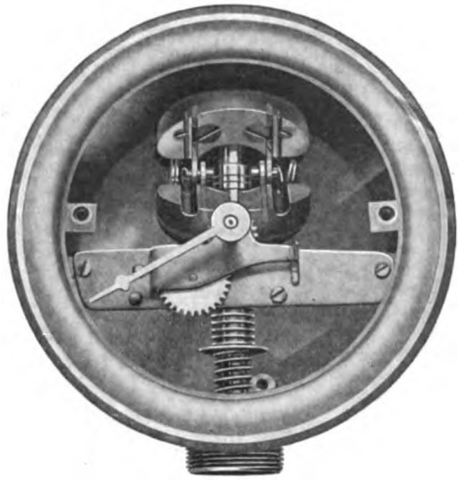
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The Automatic Spark Control takes the question of properly timing the magneto away from the element of human guess-work and automatically places it, as it should be placed, dependent entirely upon the operation of the engine.

In other words, with the Automatic Spark Control on a magneto the advancing and retarding is done as it should be done, mechanically-and-automatically-right, instead of by guess-work, or not at all, as is the case when the magneto control is in the hands of the truck driver.

The Eisemann Magneto with Automatic Spark Control makes hills like level roads—it is in the performance of hill climbing that this wonderful Eisemann product shows to greatest advantage, by reducing the necessity of gear shifting to the absolute minimum.

It's a mighty interesting story we have to tell about the Eisemann Magneto with Automatic Spark Control.

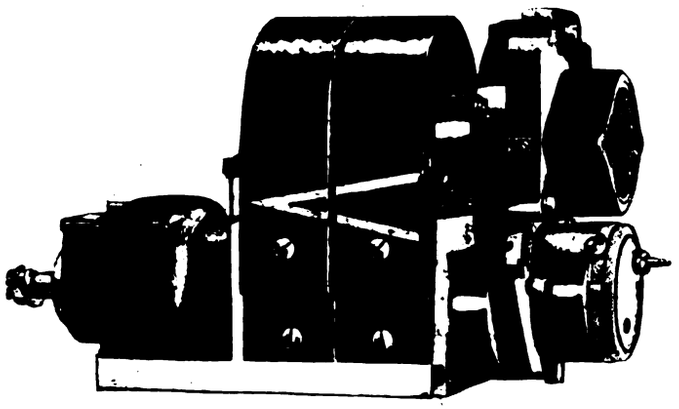
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THE EISEMANN MAGNETO CO.

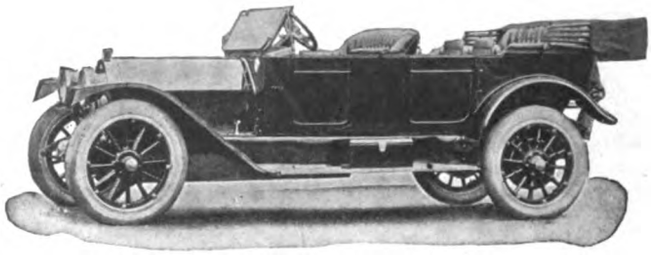
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YOUR experience with other cars should tell you that it does not pay to handle a line that constantly worries the life out of you with complaints from the user, who has trouble with the machine. This user knows now that he is better off when he buys a car of quality in the first place, even though he must pay a little more for it, and he will soon begin to demand such a car of his dealer.

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Prices $1850 to $3500
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The noticeable features of this type of BENZ cars include the offset crank shaft, smokeless oiler, and SILENT CHAINS instead of timing gears.

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To those desiring AGENCY of this car the Benz Company will offer special terms. We want RELIABLE, ENERGETIC agents to further our interests for both BENZ pleasure cars and BENZ-GAGGENAU trucks, which today stand recognized by those who know, as the leading 6-ton truck. Wire or write us, no matter where you are.

Our PRICES compete with LEADING AMERICAN makes.

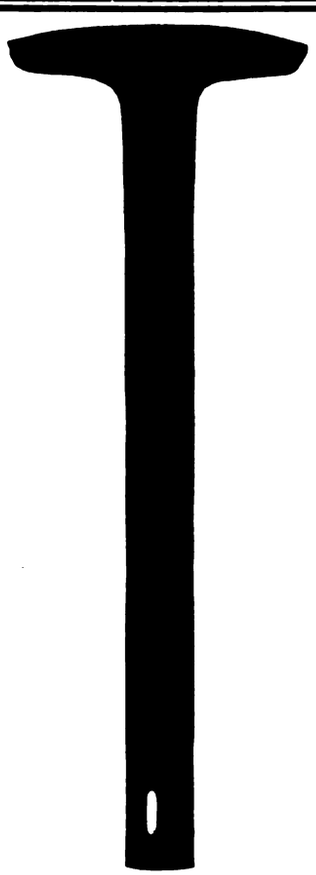
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"Tire Insurance for $1.00"
The best, simplest, most accurate, most durable and most easily read tire gauge on the market.
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In the year 1913
More Remy Magnetos
will be used on American Cars THAN ALL OTHERS COMBINED. We are the world's largest manufacturers of Magnetos, Electric Lighting and Starting Equipment for Motor Vehicles.
Standardize Your Car — Specify Remy
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Your engine leaves the factory running smoothly and sweetly—tuned up to its highest power. Perhaps the valves pit—warp · go out of shape—fail to hold compression. Then the power diminishes, and what can be more aggravating to the driver, who has known the fullness of the pulling power of his motor, than to have it grow less and less?

You cannot slight this part by putting in an inferior product—valves that will give trouble, or even break from inexperience in their manufacture—valves of unsuitable material, not suitably heat treated.

Too much is at stake, and a slight extra cost at the outset, which is the exception, may save you many times over a probable later expense.

This Company, with the experience of many years as a guarantee, will furnish you with properly made valves, of the materials best adapted to your requirements.

Not only QUALITY, but efficient SERVICE is a factor—surely there is a satisfaction in getting the kind of work you want—when you want it.

THE ELECTRIC WELDING PRODUCTS COMPANY
CLEVELAND. OHIO

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This is the message that is going to Prest-O-Lite users everywhere.

In it there is a hint for the wise dealer, as well.

You know that no imitator of Prest-O-Lite has ever successfully imitated Prest-O-Lite Service.

You also know that no imitator ever made good the large claim "more gas and better gas than Prest-O-Lite."

So does your customer.

Imitations are getting harder and harder to sell. There are now mighty few dealers trying it.

Most of those who yielded to the old but ever tempting claim "More Profits" have come back home.

To the dealer who is still trying to force imitations on people who won't have them, perhaps because he has money tied up in them, we can only say:

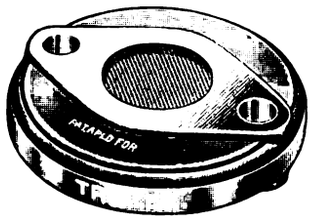
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The Prest-O-Lite Co. 287 E. South St. Indianapolis, Ind.

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Charging Plants in all parts of the country.
Extensive foreign service.

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A FUEL SAVER *and* A MONEY SAVER

Increases Power Decreases Cost

The Triplex is a device placed between the manifold and the carburetor to break up the mixture. No matter how imperfectly the carburetor does its work, the Triplex equalizes the mixture, producing an explosive gas of even, uniform quality that will burn clean to the last atom. This means that the user gets **all the power all the time**—that every fraction of energy to be obtained from the gasoline is produced and used. There is absolutely no waste. High proof gasoline is made out of low, and over 25% is saved on every gallon.

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MAKES PERFECT MIXTURE
PREVENTS BACK FIRING
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Muncie Indiana

Niagara

Dealers who handle this device can assure their trade that it is positive in action—dependable always—will not soot the spark plug.

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Note that the compressor is made from seamless drawn steel tubing, cast iron piston and piston rings. No leather washers to wear out or rot.

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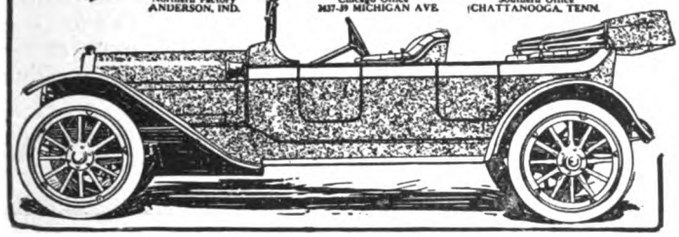
NIAGARA SALES COMPANY, Buffalo, N. Y.

Self Starter

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Nyberg SIX $1750

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Complete Specifications Sent on Request
—WE WANT LIVE DEALERS—
NYBERG AUTOMOBILE WORKS
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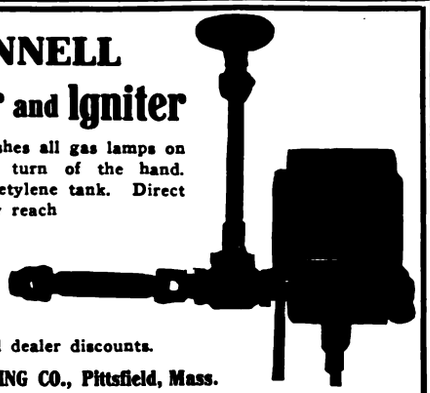
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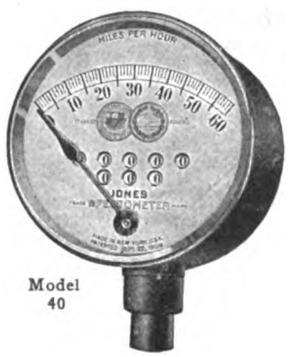
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Model 40

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JENCICK MOTORS For Motor Trucks

from base to spark plug, have features that are "Different and Better."

JENCICK MOTOR CORPORATION
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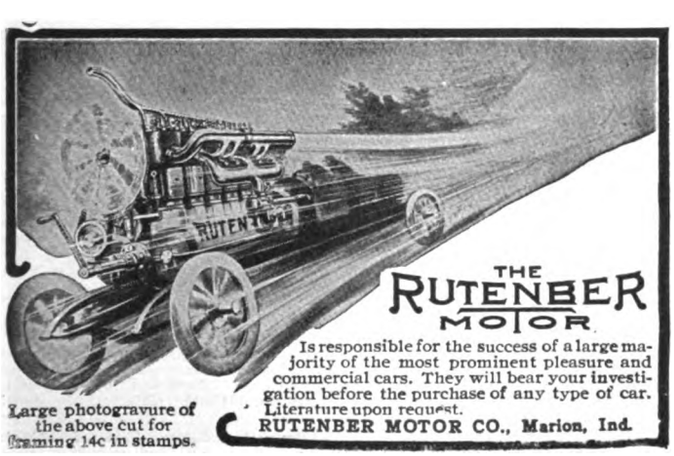
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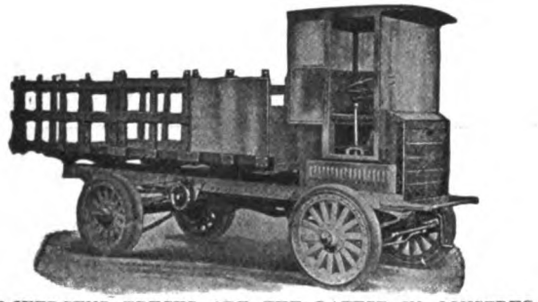
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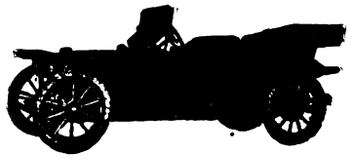
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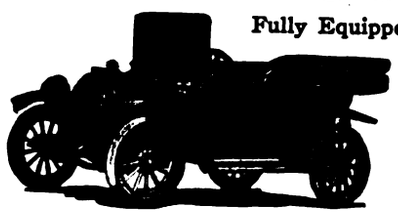
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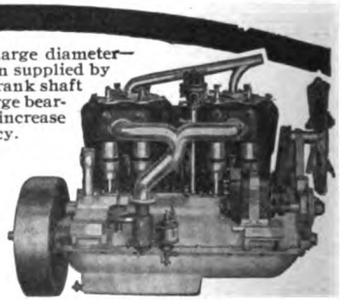
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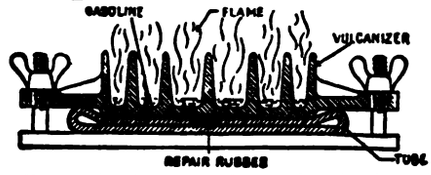
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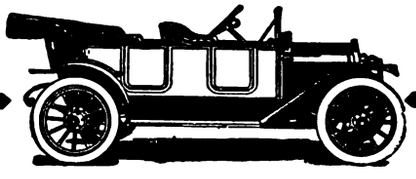
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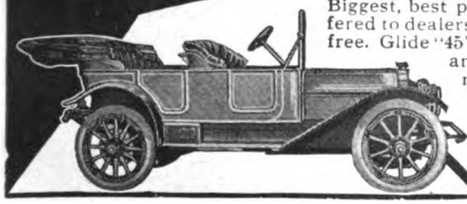
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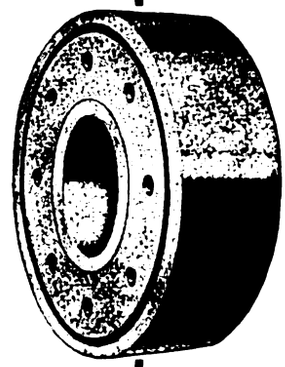
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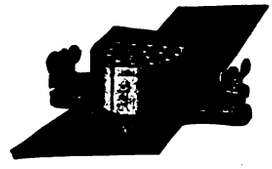
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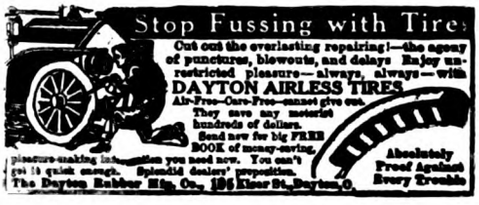
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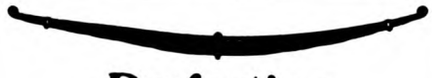
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UNITED STATES TIRES
Nothing of the kind has ever before been attempted in automobile tire manufacturing.
United States Tire Company
New York



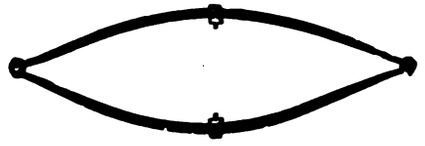


Perfection Spring Company
SPECIALISTS IN
Spring Suspension
High Grade Only
Cleveland, Ohio

GRANT - LEES GEARS
The Grant-Lees Machine Co.
Cleveland, Ohio

METZ "SPECIAL" $395
Completely equipped, fully guaranteed. 22½ H.P., 4-cylinder water-cooled motor, Bosch magneto. Artillery wheels, best quality 30" x 3" clincher tires. Makes 5 to 50 miles per hour on the high speed, 28 to 32 miles on 1 gal. of gasoline. You can secure EXCLUSIVE SALE in your territory. Send for Book "B."
METZ COMPANY, Waltham, Mass., U. S. A.

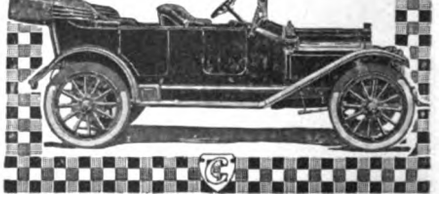
Reo the Fifth
Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 38 horsepower four cylinder car of modern refinements priced at only $1,095.
(38) R. M. OWEN & CO., General Sales Agents
REO MOTOR CAR CO., Lansing, Mich.



GUARANTEED AUTOMOBILE SPRINGS
Our plant is devoted exclusively to the manufacture of high quality springs. All work is oil tempered and warranted. Our circulars contain valuable information. Write.
PENN SPRING WORKS
BALDWINSVILLE, N. Y.

The Bush Radiator
THE BUSH MANUFACTURING CO.
HARTFORD, CONN.

Cutting
1913 IMPORTANT FEATURES
Self Starter — Electric Lighting
Turkish Cushions — 36-in. x 4-in. Tires
12-in. Upholstering — Increased Wheel Base
Great Ease of Riding — Carburetor Dash Adjustment
Demountable Rims — Nickel Trimmings
Unit Power Plant—three point suspension.
Cutting B-40, 120 in. Wheelbase, 40 h. p. 5-passenger touring car, fully equipped, $1475
Cutting A-40, 120-in wheelbase, 40 h. p. 2 passenger roadster, fully equipped, $1475
Cutting C-55, 132-in wheelbase, 55 h. p. 5-passenger touring car, fully equipped, $2000
Cutting Automobile Co.
305 Mechanic Street, Jackson, Mich.



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CONTINENTAL Six Cylinder Unit Power Plant Three Point Suspension



A "six" designed and built with the care and skill and good workmanship that have made the Continental the best known motor in America.

Built to accommodate any type of self starter now made; and suitable for either left or right side drive.

Illustration shows simple and efficient silent chain drive for starting motor.

Write for booklet

CONTINENTAL MOTOR MFG. COMPANY, Detroit, Mich.
K. F. PETERSON, Factory Representative
122 S. Michigan Blvd. Chicago, Ill.



MOTZ Cushion Tires
For Pleasure Cars and Light Delivery Cars
Send for Booklet 58
THE MOTZ TIRE AND RUBBER CO.
Executive Office: Akron, Ohio
BRANCHES:
2023 Michigan Ave., Chicago 900 Woodward Ave., Detroit
1727 Broadway, New York 609 E. 15th St., Kansas City
1409 Race St., Philadelphia 2263 Euclid Ave., Cleveland
336 W. Pico St., Los Angeles, Cal. 900 N. Craig St., Pittsburg
Standard Tire & Rubber Company, 4 Dundee St., Boston
Distributors for New England States

A—Shows *double*, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

75% Increase in Tire Efficiency
That's what the INNERSHU accomplishes. It's a tough, durable, rubberized fabric formed permanently to tire shape. Ask for circular.
INNER SHOE TIRE COMPANY
Front Street Grand Rapids, Mich.

Woodworth Treads
will help you to increase your business while benefiting your customers. We will send any responsible dealer a pair on 30 days' trial Write now. Good Agents wanted for unoccupied territory.
LEATHER TIRE GOODS CO., Niagara Falls, N. Y.



Abbott-Detroit
"The demand of the day is that an organization shall be judged by its product and not by what it claims for itself" Keep this in mind when you examine these 1913 models

MODELS AND PRICES

30-40	Fore-door Roadster, 116-inch wheel base	$1700
34-40	5-passenger, Fore-Door Touring Car 116-inch wheel base	$1700
44-50	5-passenger, Fore-Door Demi-Tonneau 121-inch wheel base	$1975
44-50	7-passenger, Fore-Door Touring Car 121-inch wheel base	$2000
44-50	Battleship Roadster, 121-inch wheel base	$2150
44-50	7-passenger, Fore-Door Limousine 121-inch wheel base	$3050

Advance Catalog on Request
ABBOTT MOTOR CO.
807 WATERLOO STREET DETROIT, MICH.
"Built for Permanence" "Guaranteed for Life"

Weed Chains

The Great Anti-Skid DEVICE

Nine-tenths of all accidents to automobiles are caused by skidding or slipping.

Either you skid into the "other fellow" or the "other fellow" skids into you.

No matter how careful a driver you may be, you cannot prevent skidding or slipping on wet, muddy snow-covered roads or on icy, slippery greasy pavements unless you equip your car with Weed Chains.

Cannot Injure Tires
Because They Creep

An absolute necessity on both rear wheels and if you want to know what real steering steadiness means put them on the front wheels too.

For your own safety—for the safety of the public, fully equip your car with Weed Chains. Make it your business to get a set today.

Recommended and sold by all reputable dealers
Weed Chain Tire Grip Co.
28 Moore St. New York

The Name "Weed" on Every Hook

The circulation of the Motor World is a guaranteed one, sworn to by an affidavit, which will be sent upon request

To Smooth Rough Roads

THE LITTLE STEERSMAN



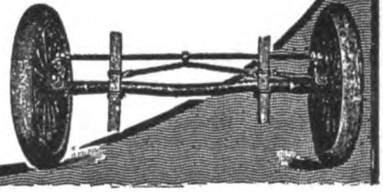
The one device most needed by the man who wants to make steering a pleasure instead of a labor.

Removes all nervous strain—takes physical strain from steering operation—holds machine steady—prevents accidents in case steering gear breaks or tire bursts.

DEALERS, JOBBERS, MANUFACTURERS, this is an article which merits your instant investigation—one which will appeal to every car owner It ought to be, and soon will be a part of the equipment of every car.

Let us tell you more about it. The story is worth knowing.

The Modern Auto Appliance Co.
15 Kinderhook Street
CHATHAM, N. Y.



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For Sale—Wants—Exchange

15 cents per line of six words, cash with order. In capitals, 25 cents per line.

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

ATTENTION—Have a few manufacturers' samples, gentlemen's black broadcloth fur lined overcoats, lined throughout with Australian mink, large genuine Persian lamb collars, sizes 36 to 48. Value $75, will sacrifice for $35 each. Also several ladies' handsome long fur coats, satin lined, worth $90, while they last, $35; and few large size fur robes, plush lined, $15 each. All guaranteed new. Examine before buying. Send express charges, will send on approval. Write or call. E ROBERTS, Room 8, 10 West 119th St., New York.

FOR SALE—Two worm drive rear axles, designed to carry 5,000 lbs. load—made by Morse-Williams Division of Otis Elevator Co., Philadelphia, Pa. Have never been in service. Make us an offer for them. SHELDON AXLE CO., Wilkes-Barre, Pa.

WANTED—General manager automobile branch house desires to make change. Can show record of eight successful and profitable years with house I am now with. BOX 228, care Motor World.

PEERLESS LEATHER TOP DRESSING
An oil preparation that softens the leather and pantasote. Makes old tops look like new. Ask your garage and supply dealer for it.
The Columbus Varnish Co., Columbus, O.

GAS TANKS only cost 40 cents to refill with acetylene. Be first in your town to know the process. Equipment is cheap. Full instructions, blue prints from the man who knows. P. C. AVERY, 321 Rookery Bldg., Chicago, Ill.

FOR SALE—4-pass., 4-cyl. Overland car, used 15 days as demonstrator; good as new; original air in tubes; 1911 model; price $650. One Otto car, 2-pass., good shape; new tires all around, $200. Will trade for 3-pass. car in good shape, all equipped. D. L. MAGEE, R. R. 1, Boonville, Ind.

WHY pay $3.50 for gasoline tube vulcanizers? For $1.25, cash with order, we will ship one of the same kind. Money back if dissatisfied. AUTOMOBILE TIRE & VULCANIZING WORKS, 626 E. 15th St., Kansas City, Mo.

NEW YORK Automobile Registrations, mailed daily, $1.75 per month. List, 1913 to date, $10.00. OWNERS AUTO LIST COMPANY, Albany, N. Y.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.
Bakes either to a high gloss finish, eggshell gloss or dull finish on lamps, radiators and fenders. Will not crack, chip or peel. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

TWO-PASSENGER Roadster, 4-cylinder, 20-H.P. Pope Tribune, for sale; good condition. 1019 5th St., Milwaukee, Wis.

MAILING LISTS—Automobile owners, dealers, garages, repair shops, commercial car owners, or any make of car. OWNERS AUTO LIST CO., Albany, N. Y.

N. E. AUTO LIST AND TOURIST.
Includes weekly list of all N. E. Auto Owners, Garages, Dealers, etc., with maps and selected N. E. routes, $10.00 yearly. 138 Pearl St., Boston.

FOR SALE—A well equipped, finely located automobile plant with a successful car below cost. Opportunity for an aggressive manufacturer. Do not delay or the opportunity may be lost. Address Automo, P. O. Box 206, Madison Square, New York.

STUCK deep in mud or sand? My new appliance will help you out. A Xmas present. E. I. SPENCER, 3201 E. Douglas Ave., Wichita, Kan.

SCORED CYLINDERS repaired, $12. No enlargement of bore—no need for new pistons and rings. Send piston with cylinder. Absolutely reliable method. References, testimonials, and full details on request. WATERBURY WELDING CO., Waterbury, Conn.

GARAGE to let or for sale. On Broadway, Lawrence, Mass. Main thoroughfare Boston to Rockingham Park. New street, block paved. Two-story building, elevator. Two pits. Tank. Rent, $150 month. Call on or address A. H. CUTTER, 333 Broadway, Lawrence, Mass.

$225. Maxwell Runabout, 1911 model, top, windshield, Prest-O-Lite tanks, lamps; just overhauled. 624 California Ave., Avalon, Pa.

HAYNES touring car, fully equipped; in good order; no junk. Owner has purchased closed car. BEE, Box 48, Station G, New York City.



An ad. like this will cost you 90c. for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order. — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

CHAUFFEUR'S COMPLETE OUTFIT SACRIFICED—Consisting of elegant marmot mink fur lined coat, Persian lamb collar, $35; pair of elegant cub bear robes, $15 each; raccoon cap, $5; pair of fur gloves, $4; pair of goggles, 50c.; 1 pair leather leggins, $3.50. Will sell separately or the lot, all new, never worn, original price, $225. C. CHASE, 118 East 28th St., New York.

DO you wish to better your position? If your character and ability will stand investigation we can place you in any occupation, anywhere. Enclose 50c. for registration with references. Fee returned if unsuccessful. Address DEPT. F, BLUE LIST EMPLOYMENT EXCH., 250 West 87th St., New York City.

PEERLESS EXTRA FINE BLACK JAPAN.

Covers solid one coat for enameling lamps, radiators and fenders. No undercoat required. Heat does not affect it. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

FOR SALE—Automobile tire and accessory business and fully equipped tire repair plant. Established city and mail order trade. Orders from 20 States this year. In present location 4 years. $2,500 cash required. M. H. HORTON, 1016 Askew Ave., Kansas City, Mo.

FOR SALE—Model T 1910 Ford 5-passenger touring car, fully equipped and in good condition, $300. FRANK O'HEARN, Melrose, Wis.

PEERLESS AUTO TOP DRESSING.

A waterproof dressing for leaking mohair and duck tops and curtains. Makes old and faded tops look like new. Ask your garage and supply dealer for it.
The Columbus Varnish Co., Columbus, O.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material, Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

PEERLESS BACK AND CUSHION DRESSING.

Softens the leather and will not crack, wash or rub off. Makes old leather look like new. Dries in twenty minutes. Ask your garage or supply dealer.
The Columbus Varnish Co., Columbus, O.

AUTOMOBILE CYLINDERS reground, new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

SALESMEN, one who is now visiting automobile trade or owners. Good money made on a very attractive proposition. STURDY MFG. CO., 2637 Michigan Ave., Chicago, Ill.

WANTED—A first-class man to take the agency for the latest invention on the market, a rubber cover for automobile handles called Steerease; write for full particulars. Address DEPARTMENT E, GOODYEAR RUBBER HOSE AND PACKING CO., 221 Chestnut St., Philadelphia, Pa.

PEERLESS LINING DYE.

Dyes the cloth linings of tops and curtains a black, uniform color, covering up water stains and grease spots. Does not wash off. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

AUTOMOBILE and Motorcycle Tours—350 trips over the best roads in every State. 56 large pages of maps and road directions. 25c postpaid. MOTOR TOURS, 51 Chambers St., New York.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

LOZIER Type H 4-cylinder touring car. Absolutely new. Demountables. Regular guarantee and equipment. Cost, $5,000. Make cash offer. 1012 N. Grand Ave., St. Louis, Mo.

FOR SALE—One 2-ton Garford truck, with body and top, nearly new, in first class condition. Change of business reason for selling. SPRINGFIELD CREAMERY, Springfield, Mass.

AUTO LISTS, owners, etc., of any State. S. H. CARROLL, JR., Albany, N. Y.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

An ad. like this will cost you $1.05 for each insertion.

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K·D

The Motor With the Sliding Crescent Valve

KNIGHT-DAVIDSON

1896 — 1912

The CRESCENT valve of the K-D Motor, fitting around the stationary piston wall affords a larger port area than any other poppet or slide valve on the market. It is simpler and, consequently, better than any other valve construction known and is here offered to discriminating manufacturers, not as an experiment, but as a tried, tested and proved mechanical advance. The K-D motor is simple, silent, cools rapidly, has the simplest oiling system known, will not carbonize. Last and most important, will give on a given quantity of fuel more power, speed and endurance, unit for unit, than any other engine on any type of an automobile. We want to present some facts to interested manufacturers.

KNIGHT-DAVIDSON COMPANY, Boston, Mass.

KNIGHT-DAVIDSON

PRESSED STEEL

FRAMES

A. O. SMITH COMPANY

MILWAUKEE

Drop Hammer Forgings

cost very little more than castings. They are vastly superior and less expensive in the end.

WE ARE SPECIALISTS

in producing

DROP HAMMER FORGINGS

from special analysis steel.

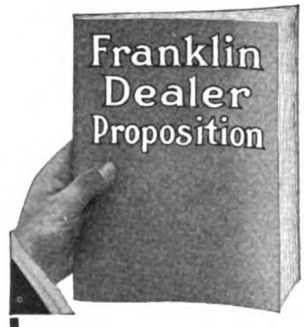
Send prints of parts you will need in

1913.

QUALITY AND SERVICE GUARANTEED

THE CONSOLIDATED MANUFACTURING COMPANY, Toledo, Ohio

Write For This Franklin Dealer Proposition



NO matter what cars you now handle—get the Franklin Dealer Proposition. Franklin is now the third largest selling high priced car, and rapidly gaining on second. Reasons—less gasoline, less oil, no smoke, fewer tires, travels faster, rides easier, wears longer, silent, powerful, flexible, beautiful.

FRANKLIN AUTOMOBILE CO.
28 Franklin Square, Syracuse, N. Y.

KISSELKAR

Every part built in the KisselKar plant, which is equipped with every facility for economical manufacture. All KisselKars have extra liberal wheelbase and roomy tonneaus unsurpassed by any car at any price for comfort and capabilities. Write for catalog.

KISSEL MOTOR CAR COMPANY
189 Kissel Avenue Hartford, Wis.

"Thirty"
"Forty"
"Fifty"
60 H.P. "Six"

KisselKar prices include full equipment—self-starter, top, windshield, demountable rims, speedometer, electric lighting equipment, shock absorbers, etc.



Better Than Commercially Perfect

GEARS

Bevel Differential
Transmission
Steering

$3,000,000 in plants affording the most superior facilities for fine work; also hardening and treating of the finished product. Most thorough inspection and testing system. Our own laboratory.

Brown-Lipe-Chapin Company

H. W. CHAPIN, Gen'l Mgr. SYRACUSE, N. Y.

M & P ELECTRIC VEHICLES · DETROIT ·

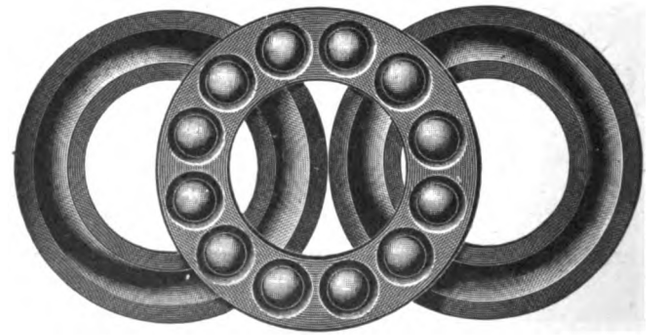
DEALERS—Here is the first electric truck that sells for about $700 less than any other. Capacity 1000 pounds—Service 100 per cent. more than gasoline truck—Economy of production most pronounced. Write.

MADE TO MAKE GOOD AND IT DOES

M & P Electric Vehicle Co.
Franklin and Dubois Sts.
DETROIT, MICH.



WE MAKE THE BEST



BANTAM ANTI-FRICTION CO., Bantam, Conn.

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Have you investigated the proposition we have to make you yet?

This is the season of the year that a heated steering wheel is most appreciated—therefor the best season of the year for you to demonstrate to your own satisfaction just what are the real merits of this necessary device.

Call upon us to make good for you. Let us show you the most practical accessory put upon the market in months. We want good representation in your territory. If you can give it to us get in touch with us at once.

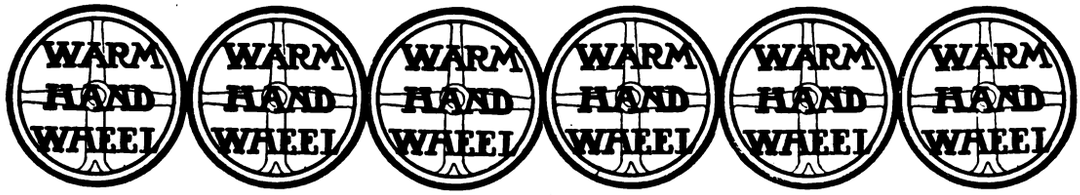
The Warm Hand Wheel can be installed upon any car in a very few moments. It is operated by the lighting outfit or storage batteries, except in the case of the Ford car. On Ford cars the Warm Hand Wheel operates from the magneto which is built into the fly wheel of Ford cars.

The cost of operating the Warm Hand Wheel is negligible as its current consumption is very low. Nevertheless it serves to keep the steering wheel just as warm as the driver desires it even for the coldest winter day. But the Warm Hand Wheel is a necessity at least six months in the year, for even in the fall and spring when the days are warm, the nights are cool enough to demand this device.

In consequence, the demand is already made. That makes the Warm Hand Wheel a certain seller, as the retail price, $15, is low enough to place it within reach of every car owner and at the same time allow you a good profit.

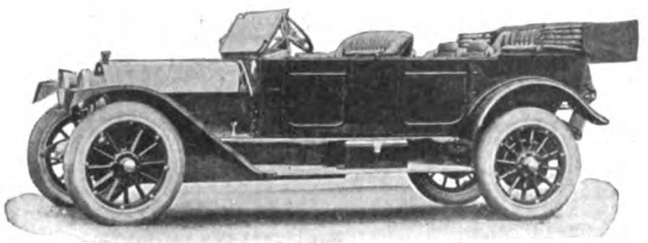
The Warm Hand Steering Wheel Company

527 Fifth Avenue **NEW YORK CITY**



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"Service and Silence"



Kline Kar Model 6-60, Touring, $2500

DEALERS

YOUR experience with other cars should tell you that it does not pay to handle a line that constantly worries the life out of you with complaints from the user, who has trouble with the machine. This user knows now that he is better off when he buys a car of quality in the first place, even though he must pay a little more for it, and he will soon begin to demand such a car of his dealer.

It is up to you to have the car in your line when he calls. The Kline Kar will answer all the requirements this prospect may impose and more.

Prices $1850 to $3500
(Fully Equipped)

Get Our Proposition

Kline Motor Car Corporation
YORK, PA. **RICHMOND, VA.**

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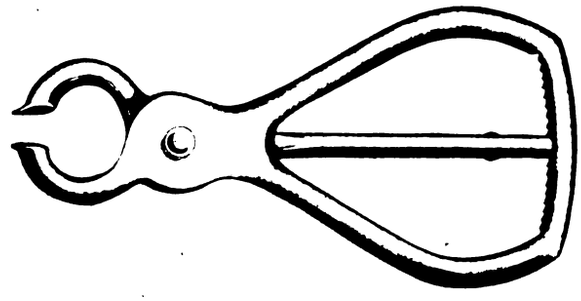
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Warner Gear Co..... 60
Warner Instrument Co..... 60
Weed Chain Tire Grip Co..... 73
Willard Storage Battery Co.... 45
Willys-Overland Co., The..... 4



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We are just about keeping pace with the tremendous demand for this "worth its weight in gold" little instrument, and so we can still fill your orders with reasonable promptness—if you don't delay.

You have read about this device. You must know how simple it operates—how positive are the cures it effects and how valuable it must be to the man who owns it. It is largely up to you, then, to help your trade in this tire upkeep matter—and you can do it by recommending Gilmer Tire Repair Pliers.

The operation of sealing up cuts and abrasions is simple. Just insert the prongs of the pliers into the injury, spread the pliers, and move the ratchet lever over far enough to make the cut perfectly accessible. Then clean the wound, insert pure rubber gum and reverse the operation of opening. Then the tire will close **over** and **around** the gum, producing a permanent repair.

Remember, Gilmer Tire Repair Pliers sell for $1.00, and to see them is to want them. It is only necessary for you to demonstrate their worth in order to make sales. And in the doing you not only reap a good profit but also make a firm friend of the man you are helping to save dollars.

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High-Priced Feature No. 7

Drop forgings are best known to the $5,000 and $6,000 cars. They demand special machine equipment; they make necessary expensive dies. The manufacturer of the $5,000 car type has got to go into the market and bid for them. He dare not consider installing the high priced machine equipment.

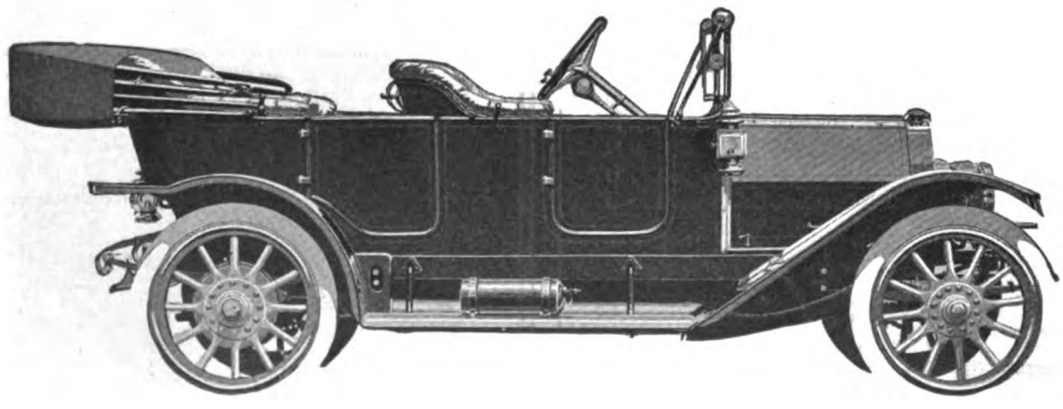
The Willys-Overland plant possesses over $3,000,000 worth of machine equipment. When we think a drop forging is needed at a certain point, we can go ahead and make it ourselves at comparatively trifling cost. In the Overland Model 69T there are no cheap castings substituted for drop forgings.

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We extend Overland drop forging to steering connections, control levers, crankshafts, camshafts, gear blanks and hundreds of other parts.

The Overland Model 69T is high priced in everything but price. In no other line can you buy as many high grade features for $985. You must pay $1200 for them anywhere else. Let us send you Overland literature to bear out these strong statements. Please address Dept. 50.

The Willys-Overland Company
Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, December 12, 1912 No. 12

NEW YORK PURSUING GARAGES WHICH "SHORT MEASURE" GASOLENE

Inspectors With Specially Equipped Car Test Tank Pumps and Offenders Are Made to Pay Penalties—Of 35 Gasolene Dispensaries Visited 17 Are Discovered Giving Short Measure.

Although some of the garagemen of New York City are sorrowfully aware of the fact, not all of them know that the Bureau of Weights and Measures has inaugurated a campaign against short measure gasolene pumps and "will catch them, if they don't watch out." Inspectors of the Bureau already have secretly descended on 35 gasolene dispensers and, surprising to relate, found 17 guilty of giving short measure. All of the offenders were cited to appear at headquarters in the City Hall, where they parted with sums varying from $5 up. One pump that was short two gills in one gallon is said to have brought a penalty of $25 a gill—a total of $50. The Bureau, however, will not disclose the names of the offenders, nor the amounts of the fines imposed.

The inspectors, who are equipped with a specially designed car which affords ready opportunity for measuring the quantity of gasolene purchased from garagemen. The properly disguised car is driven up to a garage and, say, five gallons of fuel is purchased. As soon as it is poured into the car it is at once withdrawn and measured in a standard receptacle. If it measures reasonably close, all well and good; but if not, the garageman is due for trouble. The inspectors test the pump, and if the plunger or cylinder is the cause of the shortage a condemnation tag is placed on the pump and it cannot be used until it has been repaired by the owner and passed upon by the inspectors. In case the fingers on the standard, which are set for certain quantities, are improperly set they are fixed so that the proper amount is delivered and the fingers are then sealed in place. In the several makes of pump tanks the sealing is done differently, but it all is intended to prevent tampering with the apparatus.

Whenever a pump is found short the garageman is summoned to court, and if it is his first offense the case is referred to Commissioner of Weights and Measures John L. Walsh, who recommends to the Corporation Counsel what he judges to be the proper penalty. The amount of shortage and other circumstances are taken into consideration in fixing the penalty. It generally ranges between $5 and $25. The penalty prescribed by law is $100, and if the garageman is apprehended a second time he is not turned over to the mercy of the commissioner, who almost always recommends "mercy" for first offenders, but the garageman stands trial and takes the consequences. So far in the campaign there have been no second offenses.

"Morgan Syndicate" Gets International.

What is described as "a Morgan syndicate of bankers" has made a loan of $1,500,000 to the International Motors Co., of New York, which produces the Mack, Saurer and Hewitt trucks, the loan carrying with it Control of the company. In exchange for the money, the bankers have taken common stock and will reorganize the company. Ambrose Monell, president of the International Nickel Co., will, it is said, assume control of the company when it is reorganized. C. P. Coleman is at present its head.

FLANDERS, OF PONTIAC, FAILS; TWO MILLIONS GONE TO WASTE

Many-Sided Chase for More Millions Causes the Crash, But Creditors Probably Will Receive 100 Per Cent. —Mergers That Failed to Merge—Lien on Flanders's Own Farm.

After having dissipated practically all of its subscribed capital, $2,500,000, and having amassed debts approximating $1,250,000, the Flanders Mfg. Co. of Pontiac, Mich., on Friday last, 6th inst., paid the penalty when the Federal court in Bay City, Mich., placed it in the hands of the Detroit Trust Co. as receiver.

The action was the result not of a bankruptcy petition but of a petition in equity filed by the Wagner Electric Co., of St. Louis, the petition alleging that, while not insolvent, the Flanders company did not have sufficient money to continue operations; also that there had been mistakes in its productions, that there had been internal dissention and that threatened proceedings on the part of unfriendly creditors created a situation which could be relieved only by the appointment of a receiver. The petition was supported by the affidavit of Don C. McCord, general manager of the company, who swore that the statement contained in the petition was true, the directors having authorized such action.

There also has been filed against Walter E. Flanders, president of the company, a lien of $20,000 in favor of H. R. Haberkorn, a Detroit contractor, who erected buildings on the Flanders "estate." The lien is made up of $16,500 for work done and $3,500 interest on money paid, all of which is long past due.: The "estate," a large farm near Pontiac, which embraces a small lake, was acquired by Flanders when, less than three years ago, he became rich over night. He sold a part of it to his personal "shadow,"

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adviser and press agent, E. Leroy Pelletier, and spent, it is estimated, something like $250,000 in buildings and improvements.

The assets of the Flanders company are, approximately, $2,000,000, a substantial portion of which is represented by a huge plant in Chelsea, Mich., which has been in the nature of a "white elephant" on the hands of all who ever owned it. It is believed, however, that the sale of the assets will net enough to pay all claims in full, and possibly leave something for distribution among the preferred stockholders. The common stockholders will be wiped out.

By order of the court, the receiver will continue the business until further notice, but there is every likelihood that it will be wound up as quickly as possible. As one of the creditors expressed it, "it is neither hoped nor expected that the business will be continued."

Of the indebtedness, all, save about $60,000, is due to 39 creditors, a Detroit bank being one of the heaviest. It holds notes to the extent of $150,000, which, however, are secured by the personal endorsements of Flanders himself and Dr. J. B. Book and W. S. J. Kopmeier and Geo. Uhlein, who are directors of the company. There also is due these directors approximately $150,000 for money loaned to meet various mergers.

Dr. Book was associated with Flanders in his several undertakings, and for a considerable time was his chief "angel" when money was most required. Kopmeier and the Uhleins became interested about 18 months ago, since which time they also have fairly shoveled cash into the Flanders furnace.

The failure of the Flanders company was not unexpected. Those familiar with its inside workings long had been aware that its condition was unhappy, and less than three months ago the failure was foreshadowed when Flanders plainly stated, in a communication to the stockholders, that in order to permit the business to go on money would have to be raised by mortgage bonds or otherwise. The appeal to the stockholders, however, did not strike responsive chords, and six weeks ago the company's creditors actively interested themselves in its affairs. An advisory committee of seven was appointed, which, in turn, appointed an investigating sub-committee of three, which probed deeply. It found that the sum of at least $300,000 would be necessary to carry on the business, but the refusal of the creditors to stand an assessment, or to subscribe for mortgage bonds, and the threatening attitude of several creditors made clear that the appointment of a receiver was the only way to conserve the assets for equal distri-

(Continued on page 20.)

WARD LEONARD'S PATENT LOOMS UP THREATENINGLY

Granted After Seven Years, Is Claimed to Affect Practically All Lighting-Starting Systems—Litigation Likely in February.

With the phenomenal growth in popularity of electric lighting and starting systems, that sooner or later patent litigation of a far-reaching nature must come to pass has been quite the order of things, and with the issuance to H. Ward Leonard, of Bronxville, N. Y., on November 5th last of patent No. 1,043,777 the actual beginning of such litigation has drawn much nearer. For Leonard, who is the head of the Ward-Leonard Electric Co., is sanguine that his patent, which has been pending since 1905, broadly covers several essential features of practically all of the electric lighting systems now in use.

Among them are (1) the self-closing switch which automatically opens when the car slows down so much that the dynamo voltage falls below the counter voltage of the battery, thus preventing the battery from discharging backward; and (2) the magnetic winding in the circuit between the dynamo and the battery which, when the electric energy tends to become excessive, automatically will control the field strength of the dynamo and thus automatically regulate the charging current regardless of any change in the speed of the motor car.

The Leonard patent, which is entitled Means for Control of Electric Energy, is made up of 79 claims, of which claim 70 serves to illustrate the application of the invention to dynamo lighting systems. It is as follows:

"The combination of a dynamo, a device "adapted to produce an electromotive force "counter to that of the armature of said "dynamo, a self-closing switch adapted "when closed to connect the dynamo arma-"ture and said device in a local circuit, an "electro-responsive winding connected to "said circuit and responsive to a maximum "condition of energy in said circuit, a mov-"able circuit controlling element automat-"ically controlled by said winding, and "means controlled by the automatic move-"ment of said element for controlling the "field strength of said dynamo."

It is understood that several licenses to operate under this Leonard patent have been secured and that others are being negotiated for, but that litigation will be instituted, Leonard freely admits. He states, however, that no suits will be filed until after February 1st next, when the new rules relative to patent litigation will become effective. These rules, which recently were promulgated by the Supreme Court of the United States, enable a patentee to prosecute suits for infringement in a much shorter time and at much less expense than at present is the case.

Los Angeles Tire House Changes Owners.

Franz O. Nelson, former branch manager of the Diamond Rubber Co., and Frank T. Price, a Diamond tire adjuster, have purchased the Mosher Rubber Co., of Los Angeles, Cal., and have taken over the business at 221 West 11th street They will operate under the firm style Nelson & Price, and in addition to dealing in tires, both new and second-hand, and performing vulcanizing work, they will carry a general line of automobile supplies and accessories. Price will be in active charge as Nelson has other interests to which he will devote most of his time.

Engineer Departs to Join Briscoe.

James Guthrie, for three years a division engineer for the United States Motor Co., and who is among the large number who have resigned from that establishment, has sailed to Paris, where he will meet Benjamin Briscoe, former president of the company. He will remain abroad six or eight months, during which period he will lend himself to the design and development of the under-$1,000-car which it is Briscoe's intention to place on the American market when he returns.

Reiman Sues 49 Objecting Stockholders.

Because 49 fellow stockholders in the Service Motor Car Co. of Wabash, Ind., sued out a restraining order preventing him from disposing of $20,000 of stock which he held, Charles S. Reiman, of Chicago, has instituted suit against them for $50,000 damages. The restraining order was dissolved last month, but the expense and experience to which he had been subjected Reiman believes is worth $50,000.

Schrader Erecting Seven-Story Plant.

A. Schrader's Sons, Inc., of New York, maker of the well-known Schrader valves and tire gauges, has awarded contracts for the erection of a factory building at Clermont and Atlantic avenues, in Brooklyn. It will be a seven-story, reinforced concrete structure, 100 x 225 feet.

Wagon Works to Make Motor Trucks.

The Tiffin Wagon Works, of Tiffin, O., is preparing to embark in the manufacture of motor trucks. Although its plans are well in hand, it will be several months before its product actually is ready to be placed on the market.

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DEAN BRANCHES OUT INTO SPEEDOMETER AND IGNITION

Acquires Rights to Make Forse Speed Recorder and High Frequency Ignition Apparatus—Simplicity of Hi-Fre-Co System.

In addition to electric apparatus, in the manufacture of which it has engaged for many years, the Dean Electric Co., of Elyria, O., has taken up the production of speedometers. It has acquired the rights to the Forse speedometer, which until recently was made by the company of that name in Pendleton, Ind., and has very considerably improved the device, which hereafter will be styled the Elyria-Dean speedometer. It is of the centrifugal type.

The Dean scope in the electric field itself, which gradually has widened, has been made still wider. Apart from the Tuto and Rexo horns, the Dynalux lighting system, and the Otho lighting and starting system, the rights to which it recently acquired, the company has obtained a license to operate under the High Frequency Ignition Co.'s patent and is bringing out a Hi-Fre-Co magneto and coil.

The High Frequency system was developed by a company of that name in Los Angeles, Cal., but it has had small vogue in the East. It is quite radical but its recognition by such a reputable and well established manufacturer as the Dean Electric Co. cannot but serve to give it immediate standing.

The Hi-Fre-Co magneto system consists of a low tension magneto with breaker box and low tension distributer, the whole arrangement being very similar in construction to a high tension magneto except that the armature is wound with a comparatively few turns of fairly coarse wire and that the condenser is stationary and is located on the front of the distributer; as the current generated is low tension the careful insulation necessary with high tension instruments is not required. The individual primary wires lead directly from the distributer to resonators on the spark plugs, the resonators being, in effect, merely miniature Tesla coils which operate to "step up" the current; the stepping up process gives the high frequency current properties which are peculiar to itself and which are advantageous when applied to ignition service. Other than the wiring outlined and leading from the distributer to the resonators, there is only one wire; it leads to the magneto short circuiting switch on the dash and its function is the same as the function of the ordinary magneto cut-out switch. The dual system employs exactly the same elements as does the plain magneto system, except that a combined dash coil, condenser and switch is used. The magneto current is used for regular ignition and current from a 6-volt battery is employed for the reserve system.

Goodrich Again Denies Old Rumor.

Despite the fact that the B. F. Goodrich Co. hoped that its purchase of the Diamond Rubber Co. forever would set at rest the repeated rumors of the probable or possible amalgamation of the Goodrich Co. with the United States Rubber Co., the report has been resurrected and again is going the rounds. It, of course, has been denied, and it is no secret that, rightly or wrongly, the Goodrich interests believe that the long succession of rumors is circulated for well designed purposes.

Police Seek Officer of Top Company.

On a complaint charging him with absconding with $3,300.50, a warrant has been issued for the arrest of H. J. Reynolds, vice-president of the American Top Co., of Jackson, Mich. The money, it is stated, is part of a fund of $7,000 entrusted to Reynolds by the directors for the purchase of outstanding stock of the corporation. Reynolds had an office in Detroit but has not been seen there for about one month and his present whereabouts are unknown.

East Palestine Building Tire Factory.

The East Palestine Rubber Co., which recently was incorporated in the Ohio city of that name with an authorized capital of $50,000, has commenced the erection of its factory, which will be a two-story structure, 50 x 110 feet. It is expected that it will be completed before the end of the year. Wilmer Dunbar, a well-known rubber chemist, is president, A. S. Mauk, vice-president and Abram Hartley, secretary and treasurer.

Will Wholesale Unguaranteed Tires.

The Wholesale Auto Tire Co. is the style of a new concern which has been organized in New York City for the purpose of dealing in unguaranteed tires and which will locate about January 1st at 83 Chambers street. W. P. Cole, formerly with the now passing Sonora Motor Horn Co., will be manager. He will be assisted by Wilfred E. Willis, son of E. J. Willis, a cut-rate supply dealer located at 85 Chambers street.

Palmer Turns from Cars to Chassis.

The Palmer Motor Car Co., which recently succeeded the Suburban Motor Car Co. in Ecorse, Mich., and of which R. A. Palmer has become the general manager, has abandoned the original intention to manufacture cars. Instead it will produce complete chassis for the trade.

EXODUS FROM U. S. MOTOR AS NEW REGIME APPROACHES

Maxwell, Reeves and Many Others Follow Briscoe — Two Factories Closed and Columbia Car To Be Discontinued.

Making way for the new regime, and for removal of the headquarters from New York to Detroit, the exodus from the United States Motor Co. is now in progress. In fact, it is so well advanced that the interior of the big building on West 61st street almost suggests that it had been swept by a cyclone; vacant offices and vacant desks on every side.

Best known and most prominent of those who have taken or will take themselves elsewhere is Alfred Reeves, one of the vice-presidents and general sales manager of the company. He was practically a protege and one of the closest friends of Benjamin Briscoe, former president of the United States Motor Co., and although it was diplomatically stated that he would remain in the service, the statement was accepted with more than a grain of salt. It was fairly well known that he would follow the outgoing footsteps of his former chief, but until Monday last it was not known in what direction he would go. The direction of his going is one of the surprises of the situation.

He has acquired a substantial interest in the Hartford Suspension Co., of Jersey City, of which he has been elected vice-president and general manager. He will assume his new duties early next month, and with the greatly enlarged scope of the Hartford company—which now includes shock absorbers and electric starting and lighting systems—for the exclusive production of which an eight-story steel and cement factory has been built—bumpers, jacks and spark plugs—there will be no lack of room for the display of Reeves's talents and the exercise of that geniality for which he is famed.

Reeves's duties as general sales manager of the United States Motor Co. will be assumed by E. H. Brandt, one of the district managers.

Others who have taken their departure are J. D. Maxwell, one of the vice-presidents and the designer of the car which bears his name; A. R. Gormully, general purchasing agent; C. E. Reddig, chief engineer; George T. Hanchett, consulting engineer; Berry Rockwell, advertising manager, and M. H. Newton, head of the publicity department. Temporarily, Gormully has engaged with the Steinbock Engineering Co., and Reddig has become chief en-

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gineer of the Timken-Detroit Axle Co., but the others have not yet placed themselves.

As a matter of fact, the sales, advertising, designing and engineering departments at the United States Motor headquarters have been practically wiped out; but as Walter E. Flanders, who is acting as manager for the receivers and who will assume the presidency and general management next month when the receivership is terminated, already has a large and extensive staff in his own establishment in Detroit, the vacancies will be quickly filled. J. W. Wellington, one of the United States Motors' vice-presidents, is among the few who will go to Detroit. He is to become assistant to Assistant General Manager McGuire.

The remains of the United States Motor sales staff was addressed one day this week by E. Leroy Pelletier, Flanders's publicity manager and right-hand man, who, among other things, blandly said to the assembled salesmen: "We want you to forget the past, because the old company was a failure and the name Flanders never has been associated with failure."

The formality of offering for sale certain stocks and all of the properties of the subsidiaries of the United States Motor Co. were performed this week when bids were advertised for. They will be opened on January 8th, at 11 o'clock A. M., in the United States Court in New York City. It is highly improbable, however, that there will be more than one bid to open—the one tendered by the reorganizers of the company.

Meanwhile, the manager for the receivers already has closed the Providence Engineering Works in Providence, R. I., and the Maxwell-Briscoe branch factory in Auburn, R. I. Most of the machinery of both plants will be shipped to the United States Motor factory in New Castle, Ind.

Among other things that are practically settled is the discontinuance of the Columbia car and the utilization of the Columbia factory in Hartford for the manufacture of parts for such of the cars as will be continued.

In the meantime, however, the minority stockholders of the Columbia company have not lost all hope of preventing the sale of that property, at least. Although Judge Hough, in the Federal court, declined to permit them to intervene, or interfere with the reorganization proceedings, they have appealed from his decision and the appeal will be heard on Monday next. They maintain that the Columbia company is solvent.

The United States Motor reorganizers, however, appear no more worried by this suit than by the bankruptcy action filed in New Jersey, and are going ahead with their plans as if all was serene.

TEABOLDT-METZGER AGENCY TROUBLE STILL IN COURT

Dispute of Long Standing Now Nears Trial—Exchange of Advertising for Cars Is Basis of One Point At Issue.

An echo of the days when C. R. Teaboldt & Co. was the representative of the Metzger Motor Car Co. of Detroit and sold Everitt cars in the Metropolitan district, was awakened by a case which was this week placed on the calendar of the Supreme Court for New York County and wherein the Teaboldt firm lays claim to $14,520 because of alleged faults on the part of the Detroit company. The case was filed October 21, 1911, and a delayed notice of trial was filed this week, which brings the action near to trial.

Both Teaboldt & Co. and the Metzger company—the former is out of business and the latter recently became the Flanders Motor Co.—agree that a dealership contract was entered into February 16, 1911, whereby the former was to represent the latter, the Metzger company claiming the contract was to expire July 1, 1911. Teaboldt & Co. assert, however, that the Metzger company refused to deliver cars for which 111 orders had been booked, and terminated business relations August 29, 1911, thereby damaging Teaboldt & Co. in the amount of $14,520.

The Metzger story is that the Teaboldt company was more or less short of money, that the contract expired July 1, when the agency was transferred to a company of sounder financial condition; the allegation is made that Teaboldt & Co. was disgruntled because it was not allowed to continue the contract for another year and expressed its feelings through the suit. Counterclaims are entered by the defense for cars and parts valued at $4,179.44, unpaid for, and for a balance of $3,902.83 due the company on advertising deals.

In regard to the latter claim, the defendant states that Teaboldt & Co. was authorized to sell cars to publications, part of the price to be in cash and the remainder in advertising space to "advertise generally the automobiles manufactured by the defendant." The dealer is said to have sold cars in this manner to the Review, the Globe, the Tribune and the Medical Journal, of New York, and to have used space to the value of $1,726.71, but the Metzger company alleges that there is yet unused space to the value of $3,902.83, but that the contracts are so worded that the space is the property of Teaboldt & Co. and that they have refused to transfer the space to the Metzger company. Teaboldt himself is now connected with the Packard branch in Chicago.

Northway Acquires Ohio Car Factory.

No other bids having been tendered, the receiver for the Ohio Motor Car Co., of Cincinnati, whose plant is at Carthage, O., has sold the property to Ralph E. Northway of Wyoming, O., William Pabodie of Hartwell, O., W. D. Furste and E. F. Deckebach, of Cincinnati and F. W. Enslow, a Huntington (W. Va.) barber, who constitute the Northway Motor Car Co., which recently was incorporated under the laws of West Virginia with an authorized capital of $600,000.

Northway, who previously was identified with the gas engine trade in Michigan, is president of the new company, and Furste is vice-president. They will continue the production of Ohio cars, but will devote the larger part of their energies to the manufacture of motors for the trade at large. The Northway purchase includes about 10 acres of land, of which about three acres are under roof. The purchase price was $65,000, $25,000 of which was represented by a mortgage.

Bankruptcy Finish of Singed Lion.

On Saturday last, 7th inst., Charles L. Robertson, of Adrian, was appointed receiver for the Lion Motor Car Co. of that city. The receivership grew out of the petion in bankruptcy filed by the Hess Spring & Axle Co. of Canton, O., the Frost Gear & Machine Co. of Jackson, Mich., and Moreland Bros. & Crane of Adrian. The liabilities of the company are $108,894 and its assets $105,546.

As it was fairly well known that the Lion company intended to discontinue business, as was stated in Motor World of November 26th, its formal failure is in no sense a surprise. Its plant practically was destroyed by a disastrous fire which occurred on June 2nd last, and although preparations were made to continue manufacturing operations, the company, despite its best laid plans, failed utterly to recover from the effects of the conflagration.

Changes in Cartercar Organization.

Succeeding J. J. Hartley, who has been transferred to Philadelphia, A. C. Leverton, formerly with the Brush Runabout Co. of Detroit, has been appointed general manager for the Cartercar Co. of Pontiac. A. Lehr and W. D. Block also have joined the Cartercar staff, the former as the purchasing agent and the latter as comptroller. Previously, Lehr was associated with the Studebaker Corporation and Block with the General Motors Co., of which, in fact, the Cartercar property is a part.

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The Week's Incorporations

Detroit, Mich.—Detroit Motor & Machine Co., under Michigan laws; authorized capital, $150,000; to manufacture motors. Corporators—Hal M. Smith, Jay Hayes, Frank M. Blair.

Chicago, Ill.—Petro-Haul Mfg. Co., under Illinois laws; authorized capital, $150,000; to manufacture gas engines and tractors. Corporators—H. Bierman, H. Ploeg, E. E. Schmuck.

Puyallup, Wash.—Pierce County Auto Co., under Washington laws; authorized capital, $3,000; to deal in motor cars. Corporators—Alva J. Williams, J. Edward Shrewsbury.

South Bend, Ind.—Hoke Tractor Co., under Indiana laws; authorized capital, $50,000; to manufacture tractors. Corporators—John I. Hoke, Oscar C. Chambers, Lynn I. Hoke.

Chicago, Ill.—Lakeside Motor Truck Transportation Co., under Illinois laws; authorized capital, $25,000; to operate a motor delivery. Corporators—B. P. Dunlap, E. W. Macavoy.

Jersey City, N. J.—Millar Supply Co., under New Jersey laws; authorized capital, $100,000; to deal in motor car supplies. Corporators—J. A. Duffy, W. C. Marley, M. E. Thornton.

Chicago, Ill.—Storm Shield Mfg. Co., under Illinois laws; authorized capital, $100,000; to manufacture motor car accessories. Corporators—R. E. Wighton, L. E. Street, N. P. Street.

Wilmington, Del.—Light Commercial Car Co., under Delaware laws; authorized capital, $100,000; to manufacture motor cars. Corporators—H. E. Latter, W. J. Maloney, N. P. Coffin.

Philadelphia, Pa.—Auto Safety Signal Lamp Co., under Delaware laws; authorized capital, $100,000; to manufacture motor car accessories. Corporators—L. Abeles, J. J. Drew, J. G. Gray.

Dover, Del.—American National Motorbus Co., under Delaware laws; authorized capital, $1,000,000; to manufacture motor vehicles. Corporators—C. A. Clark, S. L. Conklin, J. A. Satterfield.

Cleveland, Ohio—Marvel Automobile Supply Co., under Ohio laws; authorized capital, $5,000; to deal in motor car supplies. Corporators—J. B. Rosenstein, Samuel I. Rose, M. L. Fonts.

Buffalo, N. Y.—Empire Radiator Co., Inc., under New York laws; authorized capital, $1,000,000; to manufacture motor car radiators. Corporators—Edward B. Green, Wm. S. Wicks, Charles J. Ellis.

Akron, Ohio—Motor Starting Co., under Ohio laws; authorized capital, $25,000; to manufacture engine starters. Corporators—H. A. Woods, H. Paul, A. M. Tschantz, E. W. Paul, C. L. Dinsmore.

Niagara Falls, N. Y.—Niagara Motor Car Corp., under New York laws; authorized capital, $10,000; to deal in motor cars. Corporators—Charles E. Cromley, Donald M. Hepburn, Louise S. Hepburn.

Waco, Tex.—Waco Auto Supply Co., under Texas laws; authorized capital, $5,000; to deal in motor car supplies. Corporators—W. H. Montz, Waco; H. B. Lyne and James Harrison, Fort Worth.

Amsterdam, N. Y.—John E. Larrabee Co., Inc., under New York laws; authorized capital, $100,000; to deal in motor cars. Corporators—Louise L. Larrabee, W. Warner Leavenworth, Katherine L. Larrabee.

Bedford, Ohio—Bedford Supply Co., under Ohio laws; authorized capital, $10,000; to deal in motor car supplies. Corporators—F. B. Senter, F. H. Calvert, Geo. W. Shaw, N. C. Boyd, A. B. Condon.

Chicago, Ill.—Electric Vehicle Maintenance Co., under Illinois laws; authorized capital, $2,500; to repair electric motor vehicles. Corporators—Wm. Knobloch, Wm. C. Russell, H. A. Tarantores.

San Francisco, Cal.—Acme Rubber Co., under California laws; authorized capital, $100,000; to manufacture rubber goods. Corporators—L. Seidenberg, G. M. Davis, W. S. Baker, J. C. Montgomery, F. Kenrick.

Cincinnati, Ohio—Citizens Auto Service Co., under Ohio laws; authorized capital, $7,000; to operate a taxicab service. Corporators—Wm. M. Davis, Frank W. Kelley, Louis J. Hoppe, A. Putnam, J. Louis Koehl.

Indianapolis, Ind.—New-Miller Carburetter Co., under Indiana laws; authorized capital, $200,000; to manufacture carburetters. Corporators—F. O. Fairbanks, R. M. Fairbanks, L. H. Calvin, Oscar L. Snyder, N. M. Doyle.

Aberdeen, So. Dak.—Aberdeen Automobile & Supply Co., under South Dakota laws; authorized capital, $25,000; to deal in motor cars and supplies. Corporators—G. M. Worthington, C. D. Worthington, M. J. Kidd.

Indianapolis, Ind.—Auto Lamp & Number Co., under Indiana laws; authorized capital, $3,000; to manufacture accessories. Corporators—Ransom Griffin, A. P. Conklin, R. H. Bruce, William F. Johnson, George L. Maas.

Columbus, Ohio—Bracken-Stauton Co., under Ohio laws; authorized capital, $5,000; to deal in motor cars, etc. Corporators—Wm. Franklin Bracken, Mary E. Stauton, Leo A. Stauton, May Bracken, Thomas M. Curtain.

Cleveland, Ohio—Dayton Airless Tire Sales Co., under Ohio laws; authorized capital, $10,000; to deal in motor car tires. Corporators—William A. Carey, H. Krejoi, F. M. Chandler, Ralph W. Edwards, M. Otter.

New York, N. Y.—Flex-O-Fill Core Co., under New York laws; authorized capital, $50,000; to manufacture tire filler. Corporators—Guy Osborn, 1493 Broadway; L. McCready, 50 Church street; F. H. Crooks, Newark, N. J.

Elmhurst, N. Y.—Elmhurst Garage, Inc., under New York laws; authorized capital, $5,000; to operate a garage. Corporators—T. G. Smith, 26 Clermont avenue; P. J. Testen, Millie Testan, 2123 Troy avenue, Brooklyn, N. Y.

New York, N. Y.—Gilbert-Fulton Corporation, under New York laws; authorized capital, $1,000; to deal in motor cars. Corporators—George J. Gilbert, Otto Gilbert, both of 556 West 181st street; Donald J. Fulton, 111 West 64th street.

New York, N. Y.—Bradhurst Garage Co., under New York laws; authorized capital, $5,000; to operate a garage. Corporators—George Glynn, 106 West 116th street; Jerome C. Jackson, 20 West 71st street; Paul R. Gordon, 149 Broadway.

New York, N. Y.—Rector Engine Corp., under New York laws; authorized capital, $150,000; to manufacture motors. Corporators—Edward Gore, 262 West 136th street; William Magowan, 250 West 154th street; Samuel C. Yeaton, 324 16th street, Brooklyn, N. Y.

New York, N. Y.—Motor Hauling Corporation, under New York laws; authorized capital, $5,000; to operate a motor delivery. Corporators—William G. McGrath, 68

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William street; Mathiew B. Sentner, 52 Wall street; Samuel B. Kerr, 261 West 112th street.

New York, N. Y.—Auto Exchange & Equipment Co., under New York laws, with $1,000 capital; to deal in motor cars and equipment. Corporators—Harry Lauterbach, Idella Lauterbach, 1564 East 14th street, Brooklyn; Charles A. Spencer, 430 West 116th street.

New York, N. Y.—Kells Motor Radiator Corporation, under New York laws; authorized capital, $650,000; to manufacture motor car radiators. Corporators—Henry A. Bingham, 32 Nassau street; Alexander F. Garbe, 400 East 141st street; Cornelius A. Cole, Hackensack, N. J.

New York, N. Y.—American Commer Truck, Inc., under New York laws; authorized capital, $10,000; to manufacture and deal in motor trucks. Corporators—Raymond C. Thompson, 255 West 72nd street; Julius Kahn, 38 Union Square; Edward C. O. Thomas, 453 West 155th street.

New York, N. Y.—Universal Auto Appliance & Construction Co., under New York laws; authorized capital, $5,000; to manufacture motors, etc. Corporators—Frederick W. Darnstaedt, 535 West 162nd street; Moise J. Leclerc, 612 West 184th street; Henry B. Tucker, Mount Vernon, N. Y.

Changes of Capitalization.

St. Paul, Minn.—Electric Mfg. Co. from $10,000 to $60,000.

Toledo, Ohio.—McNaull Auto Tire Co. from $50,000 to $75,000.

Springfield, Ohio—Victor Rubber Co. from $69,000 to $150,000.

Detroit, Mich.—Van Blerck Motor Co. from $10,000 to $100,000.

New Britain, Conn.—Fafnir Bearing Co., from $100,000 to $200,000.

Monticello, Ind.—Clifford Automobile Co. from $15,000 to $30,000.

Recent Losses by Fire.

West Oakmont, Pa.—John T. Anderson garage damaged. Loss, $8,000.

Baltimore, Md.—Enterprise Fuel Co., Oak street, garage and several cars damaged. Loss, $20,000.

Philadelphia, Pa.—Kensington Motor Car Co., 1739 North Front street, garage damaged and eleven cars destroyed. Loss, $20,000.

Change of Corporate Names.

Akron, Ohio—Ideal Commercial Car Co. to Akron Motor Car & Truck Co.

Dayton, Ohio—Heathman-Holliday Motor Co. to Frank B. Heathman Motor Co.

SECOND PREFERRED OF U. S. RUBBER IS TO BE RETIRED

Four Shares To Be Exchanged for Three of First Preferred—Preliminary to Taking Over of Rubber Goods Company.

Carrying out the orders of the stockholders given at a meeting held last May, the directors of the United States Rubber Co. on Thursday, 5th inst., authorized the retirement of its second preferred stock. The retirement will be effected by the exchange of three shares of first preferred for four shares of second preferred.

It also was decided to offer to outside holders of Rubber Goods Co. preferred stock amounting to $2,413,900, with the privilege of exchanging their stock for the preferred shares of the United States Rubber Co.

According to one who is versed in the affairs of the financial district, it seems likely that at the outside close to 85 or 90 per cent. of second preferred shareholders will accept the offer of exchange.

"There is no reason why they should not do so," says this Wall street authority. "Their income will remain unchanged, as the first preferred pays 8 per cent. and the second but 6 per cent. The principal argument for the change is that they get a prior security, one of a much larger total, and therefore with a much wider and more stable market.

"In making an offer of par for par of United States Rubber preferred for Rubber Goods preferred, the Rubber company has in mind the ultimate carrying through of plans making it possible, if ever the feasible moment arrives, of a consolidation into itself of the Rubber Goods Co. By accepting the offer, Rubber Goods minority preferred shareholders will get 8 per cent. in dividends in place of the present 7 per cent.

"The feature of the new financing plans which is perhaps least understood is the proposed doubling of the capital stock of the General Rubber Co. by an increase from $5,000,000 to $10,000,000.

"This increase in capitalization is taken to provide funds for development of the big Sumatra and Ceylon rubber plantation. General Rubber Co. is the crude rubber end, and it owns and is directly concerned in this Far Eastern development. As all stock of General Rubber Co. is owned by United States Rubber and Rubber Goods Co., any issuance of the $5,000,000 new stock by General Rubber will involve no public financing."

As is quite generally known, the Rubber Goods and United States Tire companies are subsidiaries of the United States Rubber corporation.

Willys-Overland Stocks Open Strong.

Placed on the market for the first time on Monday last, Willys-Overland common stock opened on the New York curb at 69-71. The preferred is held at 100, which is the price set by the banking syndicate which engineered the refinancing of the Willys-Overland Co. The quotations are unusual, in that only one other 7 per cent. preferred stock of an automobile concern sells at par or better. The exception is the Packard Motor Car Co. preferred, selling for about 105. Overland common at 71 compares with General Motors at 38½, Studebaker at 43, United States Motor at ⅛, and Packard at 205.

Bruns and Victor Companies Settle Dispute

Differences which arose between the Bruns Auto Co., of Brooklyn, and the Victor Motor Truck Co., of Buffalo, N. Y., regarding a dealership were settled last week when an action instituted about a year ago in the Supreme Court for Kings county was discontinued. The Bruns claim was that it paid deposits of about $1,100 on contracts for trucks and that, following a disagreement of Victor affairs in New York City, the trucks ordered were not forthcoming and the deposits were not returned.

Ford Assets Now Exceed $20,000,000.

According to a statement of its condition made public early this week, the total assets of the Ford Motor Co., of Detroit, amount to $20,430,000, an increase of $7,833,000 during the year. The real estate and buildings are valued at $4,266,000, an increase of $2,655,000. The increase in the floating indebtedness amounted to $426,000, but, on the other hand, accounts payable were decreased $500,000. The increase in the surplus for the year amounted to $6,910,000.

Republic Rubber Advances Two Workers.

To fill the vacancy caused by the death of L. J. Lomasney, L. T. Petersen has been elected first vice-president of the Republic Rubber Co. of Youngstown, O. John H. Kelly, sales manager, was chosen second vice-president, which office previously was occupied by Petersen. At the same meeting of the Republic directors, A. H. Harris was added to the board.

Grossman Sails to "Do" Europe.

Emil Grossman, president of the Emil Grossman Co., New York, is among those who sailed to attend the Paris show. Before his return he will visit also the leading automobile and accessory manufacturers on the Continent.

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In the RETAIL WORLD

C. G. Lemley and C. F. Wright have secured permission to build a garage in Portland, Ore., on 23d street; it will cost $15,000.

W. R. Derrick, a horse livery operator in Vallejo, Cal., is to enter the automobile trade; he is about to build a garage adjoining his stables on Capitol street.

Merritt J. Osborn, a dealer in St. Paul, Minn., has purchased a site on 6th street and will erect a new building; the estimated cost is $55,000. He handles the White line.

Merritt Osborne, Detroit electric and White distributer in St. Paul, has opened a garage in Minneapolis on what is known as the "Hill." It is his third garage in that city.

The Forest Street Garage has opened up in Gloversville, N. Y., under the management of Joseph Maurie; Regal, Metz and Inter-State cars and Gramm trucks are carried.

B. W. Rowe of Orlando, Fla., has purchased an interest in the Sanford (Fla.) Machine & Garage Co. He will remove to the latter town and engage actively in the business.

Clarence Smith has bought a half interest in the automobile and repair business of W. P. Ruth, in Downs, Kan. It is proposed to enlarge the plant and improve the equipment.

C. J. Benham and W. H. Pierce have entered the trade in St. Paul, Minn., with quarters at 352 Minnesota street; they will carry Nassau tires and will handle the Cartercar.

C. E. and Leon Williamson, B. F. Gilman and Homer Marsh are about to build a garage, 45 x 100 feet, in Tecumseh, Mich. They will operate under the style Tecumseh Garage.

The Fashion Automobile Station, at 4610 Cottage Grove avenue, Chicago, is about to erect a garage on 51st street; it will have a capacity for 450 cars. Harry Salvat is manager.

The G. W. Hawkins Automobile Co., of Houston, Tex., is having new quarters erected at Dallas avenue and Main street; it will be ready for occupancy before the end of the year.

The Kansas City (Mo.) Automobile & Supply Co., of 1504 Grand avenue, has purchased land near 18th street and will erect a building for its occupancy; the cost is estimated at $40,000.

B. D. Spinney, J. Stuart Bertram and Geo. Routh have entered the trade in Jacksonville, Fla., at 905-907 Main street; Spinney and Bertram have been connected with the business for more than 10 years.

With capital of $25,000, a garage company has been formed in Barnesville, Minn. The incorporators are E. Leonhardt, G. J. Dahm, G. W. Seefeldt, J. H. Fisch, J. A. Cramer and J. H. Boltz, all of Barnesville.

Curtis, Gray & Reilly have entered the trade in New Hampton, Ia. The members of the firm are J. L. Curtis, Charles Gray and Frank and Charles Reilly; a salesroom and garage, 35 x 100 feet, are being erected.

Carl Ayers has sold his interests in the firm of Ayers & Phiffer, in Horton, Kan., to his former partner, Willard Phiffer, who has admitted Theodore Schecher to partnership. The new firm has secured the Studebaker agency.

Under the style Private Garage Service Co. a somewhat novel business has been established in Chicago, at 556 East 40th street; the company will cater only to those car owners who keep their automobiles in private garages.

Two stories are being added to the building at 915-917 East Pike street, Seattle, Wash., occupied by the M. S. Brigham Motor Car Co. The company handles Cadillac cars. When completed the building will contain 18,000 square feet of floors.

The Capitol Auto Co., of Springfield, Ill., whose building was recently destroyed by fire, plans to secure temporary headquarters on Washington street, near First, and later to rebuild on the site of the burned structure; J. Stuart Allen is manager.

Auto Equipment & Supply Co. is the style of a new enterprise in Grand Rapids, Mich. A downtown location is being sought; the officers are: President and manager, E. R. Corbin; vice-president, Leon V. Underwood; secretary and treasurer, C. W. Darrah.

B. H. Coleman of Warren Center, Pa., has purchased the interest of J. T. Corbin in the Athena Motor Co., of Athens, in the same State; Leo Segar, the other member of the firm, will continue the business with Coleman. The old style will be retained.

The S. & L. Machine Repair Co. in Cleveland, O., has been succeeded by the Southside Garage; S. M. Slansky and J. M. Siller, who also are proprietors of a supply store at 25th street and Clark avenue, will continue the garage business at 3114 West 32d street.

Frank C. Smith, for a number of years connected with the John Widdicomb Co., of Grand Rapids, Mich., a furniture concern, has entered the automobile trade; he has secured the agency in his city for Detroit electrics and has his salesrooms with the Becker Auto Co.

E. J. Bartlett, formerly sales manager for the Stutz Motor Car Co., of Hartford, Conn., has been made Stutz dealer in the counties of New Haven, New London and Middlesex; the style will be Stutz Motor Car Co. of New Haven, the business being located in the latter city.

Merritt J. Osborn of St. Paul, Minn., has purchased a site, 91 feet on 3d street and 150 feet on College avenue, and will erect thereon a two-story garage; when completed it is said it will be the largest garage in the Northwest. Merritt handles White gas cars and Detroit electrics.

T. C. Peterman of Perry, Ia., and L. E. Mason of Lohrville, in the same State, are building a garage in Slater, also an Iowa town; they will occupy it in the spring and, besides conducting a garage, will deal in several lines of cars. Peterman now is a dispatcher on the C., M. & St. P. R. R.

Bishop & Loper, who just have taken the Abbott-Detroit agency, are erecting a new unit tile garage, 60 x 100 feet, in Port Jefferson, Long Island, N. Y., which will be ready for occupancy about January 1. The firm also owns the Ardencraig Garage in Port Jefferson, which will be continued.

The Ardery-Holliday Motor Car Co., of St. Joseph, Mo., has completed a garage and salesrooms, 75 feet on 8th street and 85 feet on Sylvanie street; the first floor is devoted to sales and live storage and the second floor to dead storage, the machine shop and supplies. Hudson and Marathon cas are stocked.

Patchogue Garage Co. is the style chosen by Harry Lawrence, Jr., and J. A. Udall, Jr., for a new agency and garage business in that Long Island town; they will handle

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the Abbott-Detroit and Jackson lines. Their building, which is new, is 50 x 100 feet, with a wing containing a machine shop, and is of unit tile construction.

Hansen-Thuesen Automobile Co. of Fresno is the style of a new California company which will operate in Fresno and San Francisco; it has the agency for the Norwalk car. Hansen will have charge in Fresno and Thuesen will conduct the company's affairs in San Francisco; at present the latter is located in the Jackson headquarters in Golden Gate avenue.

Changes Among Prominent Tradesmen.

P. F. Steinhauer has been appointed sales manager of the Colby Motor Car Co. of Mason City, Ia. Previously he was an Abbott-Detroit traveling representative.

Gerald Fitzgerald, assistant manager of the Remy Electric Co.'s branch in Chicago, has been promoted to the management of the branch which the company is opening in Minneapolis. He will assume his new duties on January 1st.

Ralph Murphy has been appointed manager of the H. H. Franklin Mfg. Co.'s service department in Syracuse, N. Y., succeeding J. F. Troutman, resigned. Before taking up his new duties Murphy was chief of the Franklin inspection department.

Everitt S. Benson, who has been assistant eastern district manager of the United States Tire Co. since its organization, has resigned that office. His plans for the future have not yet matured. Benson is a veteran tire man, having at one time been secretary of the Hartford Rubber Works Co. and later treasurer of the G & J Tire Co.

Claude M. Nankivel, 17 State street, New York City, has been appointed foreign distributor for Stewart trucks, made by the Stewart Motor Corporation of Buffalo, N. Y. He will handle the sale of those vehicles in Europe, Australia, New Zealand, South Africa and South America. Nankivel is no stranger to export work, having had ripe experience not only in the automobile business, but with others.

A. J. Fisk, at one time general manager of the Witherbee Storage Battery Co. and at present serving as western sales manager of A. R. Mosler & Co., has resigned the latter connection to become identified with the Ward Leonard Electric Co. of Bronxville, N. Y. Fay Morton Henkel, for four years eastern manager of the Remy Electric Co., also has become attached to the Ward Leonard Company. Both Fisk and Henkel will serve in the sales department.

Minor Business Troubles.

The Central Tire Supply Co., of 2540 Broadway, New York City, has filed schedules in bankruptcy i nthe Federal court; the liabilities are $3,208 and the assets $1,206, consisting of stock, $200; accounts, $818; office furniture, $100, and cash, $88.

Herbert C. Crane, general manager of the Seek Auto Co., which operates a garage at 5140 Lake avenue, Chicago, has petitioned for the appointment of a receiver; the petition is directed against J. Harry Seek, E. D. Green and E. W. Mick, the other stockholders.

The Tire Core Co. of America, New York the Eastern distributer of Dahl tire filler, located at 246 West 59th street, New York City, filed its schedules in bankruptcy this week. The assets amount to $3,364 and consist of one car, $650; machinery, $323; office furniture, $262; accounts, $2,016; cash, $113. It also has a claim of $20,000 against the Dahl Punctureless Tire Co., of Minneapolis, Minn., the value of which is problematical. The liabilities are $8,240.

Klaxon-"League" Appeal is Argued.

Argument was heard this week in the United States Circuit Court of Appeals for the Second Circuit, in New York City, in the appeal of the Lovell-McConnell Mfg. Co., of Newark, N. J., against the International Automobile League, of Buffalo, N. Y., growing out of the efforts of the former to prevent the Buffalo house selling, advertising or in any other way handling the Klaxon horns. The suit charges infringement of the Klaxon patents Nos. 923,048, 923,049 and 923,122.

In the United States District Court in Buffalo the Lovell-McConnell company was granted an injunction restraining the League from cutting the Klaxon prices, and the plaintiff asked that the injunction be made more extensive so as to restrain the League from handling the horns; this the court denied and an appeal was taken.

In the argument in the higher court this week the recent Dick mimeograph decision of the United States Supreme Court, which held that a patentee might specify what materials should be used with his invention, was cited as upholding the conditional license plan under which the Lovell-McConnell products are sold and which permits the company to declare "objectionable" anyone who does not adhere to its terms.

Purchaser Fails to Recover Deposit.

If a man makes a deposit on a motor truck for future delivery and before the delivery date decides that he does not need the vehicle, he may do well to study the case of Alexander Bing vs. Garland Automobile Co., which was decided in favor of the defendant this week in the New York City court. The Garland company, which represents the Velie truck, claims the whole action was caused because Bing, who is an art manufacturer, changed his mind about the purchase and adopted a peculiar means for getting his money back. According to the termination of the court action, he will not get it back.

The order for the truck was placed with March 10, 1912, as the delivery date; $300 was the deposit. March 26, the Garland company claims, Bing asked to have the delivery date postponed, and April 26 a letter was written to Bing asking him when he would take his truck. The next afternoon at 5 o'clock, it is stated, he appeared at the Garland company's place of business with an attorney and demanded his truck. He was told it could not be gotten out of the garage for him that night, but that he might have it the next day. Bing therefore set up a claim that he had been refused his truck and asked for his money back.

Hollister Trucks with Hydraulic Clutch.

Composed largely of former members of the Remington Standard Motor Co., which, as was told last week in Motor World, got itself into difficulties with its licensor, the Manly Drive Co., and which is going out of business, the Hollister Standard Motor Co. has been incorporated under New York laws with $675,000 capital. Adolph Bausch is president and treasurer of the new company and Learned White is secretary. Although both of these men were intimately connected with the Remington company, as were W. H. Langford, H. H. Sivier, B. F. Yoakum, Emerson Brooks, P. E. Remington, George A. Grounds and David H. Lyons, all of whom are directors in the new company, no attempt will be made to employ the Manly drive transmission about which the Remington truck was built. Instead, the new company is preparing to bring out two entirely different commercial vehicles, rated at three and five tons' capacity. The use of hydraulic mechanism still is adhered to in the new truck, however, though it is not in the driving mechanism, strictly speaking. It will employ a hydraulic clutch, which is the invention of C. P. Hollister, for whom the company is partly named, but otherwise will be orthodox as regards its power plant and transmission elements. Already a factory, 300 x 75 feet, has been acquired in Farmingdale, L. I., N. Y., and active preparations are being made to introduce the initial product in the very near future.

Armstrong Doubling Output of Springs.

The J. B. Armstrong Co. of Flint, Mich., which manufactures automobile springs, has commenced the erection of two additions to its plant—one 85 x 140 feet, the other 35 x 100 feet. The new buildings will double the Armstrong capacity.

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN E. F. HALLOCK

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Advertising Manager
HOWARD L. SPOHN LOUIS R. SMITH

WESTERN ADVERTISING MANAGER
W. H. TRIPP, 1001 Ford Building, Detroit
GUS. H. JOHNSON C. H. HANDERSON
DETROIT, 1001 Ford Building CHICAGO, 1441 Monadnock Block
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OUTPUT "FORECASTS" AND DEPOSIT SYSTEMS.

It is not often that trade organizations of such size or importance take notice of such statements appearing in print, but it has become known that the executive committee of the National Association of Automobile Manufacturers has deemed it wise to take cognizance of the exaggerated estimate of the 1913 output compiled by an alleged automobile trade journal, which was so proud of its work that it mailed the figures to the daily press of the United States, which largely reproduced them. In courteous terms, the executive committee has suggested to the trade press that publication of such inaccurate figures serves no good purpose. Certainly, their wide circulation gave rise to a great diversity of printed opinion, not all of which was favorable to the automobile interests.

In its issue of November 21st, Motor World remarked the ridiculously exaggerated statistics in question, which would have it believed that the probable production during 1913 will be 627,000 cars, and stated that the figure was so grossly inaccurate that it was astounding that any one who even claimed to be in touch with the trade should stand sponsor for it.

The action of the N. A. A. M. in diplomatically "deploring" the dissemination of the "forecast," should have a good effect on the ready reckoners and cause them to temper their endeavors with at least a semblance of common sense. There is no doubt but that the 1913 output will be larger than the production of 1912; even without being made ridiculous, it will be quite large enough for all practical purposes, if, indeed, it does not prove too large.

In this respect, and exerting an influence which is not always recognized, the deposit system which, while apparently an artificial development of the automobile industry, and one that often has required defense, has proven in the nature of a blessing in disguise. While it has not and cannot wholly prevent over-production, it has greatly reduced the volume thereof and assisted to keep it within reasonable bounds. As one of the best known manufacturers, in a public address, recently remarked, "the number of cars a dealer can sell while in a manufacturer's office is often quite different from the number he actually can sell in his territory." The deposit system is a curb on such unbridled enthusiasm, for not every dealer is ready or willing to back his enthusiastic estimates with deposit money. Over-production is the bane of all industries, and anything which tends to reduce or restrict the evil is a safety valve, the value of which is not to be minimized or despised.

OPTIMISM AND RAINBOW CHASING.

Properly tempered, optimism is a glorious quality; it is the sunshine of life. It promotes good cheer, dissipates the blues, permits to be seen the silver lining behind the cloud and generally inspires men to greater things. But nothing has caused more grief than the loose and oft-expressed sentiment of public speakers and public writers that whoever is not an optimist is a pessimist, or a "knocker," to employ inelegant vernacular. It is belief of the sort that induces fools to rush in where angels fear to tread.

There are degrees of optimism just as there are degrees of pessimism. It is an admixture of both that achieves the best results. When this state of mind obtains it permits both sides of the picture to be seen; it permits a balance to be struck and serves to steady both men and things. It is unrestrained, or at least poorly tempered optimism that is largely responsible for the succession of crashes that have occurred in the automobile industry during the past three months.

The discomfited individuals were long on optimism and short on judgment. Their eyes were trained only for sunshine. The fact that occasionally even the heavens grow dark and that rain falls did not occur to them until too late, or when rain fell they had thoughts and eyes only for the glorious rainbows which follow, and at the foot of every rainbow they discerned even more clearly the pot of gold which is associated with childhood. They saw only millions in the automobile industry, and, seeing nothing else, they pursued rainbows and blew bubbles with the simple abandon and unrestrained enthusiasm of childhood.

The child is a most glorious example of optimism. But when children attain to man's estate it is fitting and in the nature of things that they temper their optimism and cease to see castles in bubbles and pots of gold in rainbows. In other words, the day of "rainbow chasing" in the automobile industry is nearly past. "Rainbow chasers" may remain but in the end they and their followers cannot but come to grief. Men will continue to fool themselves but it is not possible to fool all of the people all of the time.

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NEITHER AGE NOR CLOTHES AN INDICATOR OF A BUYER

Attention to Poorly Clad or Youthful May Reveal Customer—Dealers Who Judged, One Right, One Wrong.

"'Tis not the clothes that make the man," has been harped on for so many centuries that some people really believe it, although there are many who still are prone to cater to creased trousers and patent leather shoes. Likewise the old saw may be remodeled for present usage and supplemented to read, "'Tis neither clothes nor age that make the individual a prospective buyer of an automobile." Doubters of the veracity of the revision might gain knowledge of its truth by inquiry among any one of the first half dozen automobile salesmen they encounter, for it is a man of limited experience indeed who has not had occasion to test its truth.

New York City has two automobile men, one of whom is thankful he did not become cross on a recent occasion, while the other regrets having made a false estimate of his callers. One of these dealers had a large, screaming yellow touring car in his window—in fact, he had had it in the window for so long that he had despaired of selling it.

The list price, which would acord him a commission of $500, was $2,500. One afternoon a couple of young girls strolled into the salesroom and asked what the dealer wanted for the car. As he saw them approaching they impressed him as what he termed "a pair of broilers looking for a ride."

But when asked, "How much do you want for that car?" he carelessly answered, "Two thousand dollars," supposing that mention of such an amount would put the girls to rout.

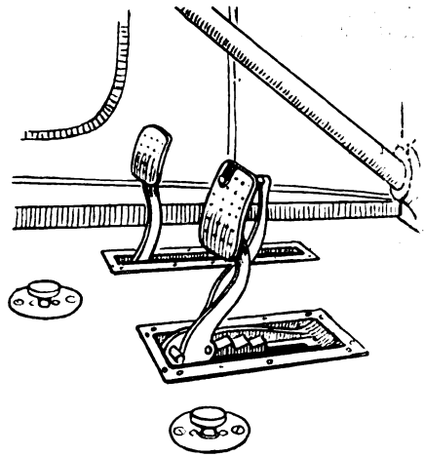
He was on the verge of collapse when one of the demurest of the maidens responded, "All right, we'll take it." And buy it they did. The false estimate and careless remark cost the dealer his commission of $500.

Another dealer was tempted to shout "Get out of here!" when two small but well dressed boys walked into his store one day and began to ask questions about a car. The dealer decided to act with discretion, however, and, although regarding it as wasted time, answered to the best of his ability the inquiries of the boys. The next day he found what the "wasted time" was worth, when the two boys and a man walked in and, as the dealer approached them the boys cried, "There, papa, there's the man who told us all about the car!"

Papa bought the car.

Little Known Features of Well Known Cars

Of the very many things which can enter into and make the driving of a car either a pleasure or a task, according to conditions, probably none is more assertive than the location of the control elements, and it is a fact that many cars which, praiseworthy for other details, have received "black eyes," so to speak, simply because the very essential levers which have to do with the manipulation of the machine were not conveniently located. And realizing that what



BUFFALO ELECTRIC PEDAL CONTROL

is true for the gasolene cars also is applicable to the electric vehicle, the designers of the Buffalo electric car have spared no pains to place the main control, which is, of course, the lever operating the motor controller, in a location where it can be moved with the greatest of ease—by a simple depression of the foot.

As is clearly shown in the accompanying sketch, the pedal which operates the rheostat is placed so as to be operated by the right foot; the pedal on the left side operates the brake. Provision is made for retaining the pedal in any position on the arc without the necessity of holding the foot on the pedal by the use of a dog engaging with a rack on the quadrant; the dog can be instantly released and the power cut off either by touching the button which passes through the pedal with the tip of the toe, or by applying the brake.

The Diamond Tire & Rubber Co. of Canton, O., has established a branch in Atlanta, Ga., at 221 Peachtree street. It is in charge of H. C. Ross, who for the past several years has represented the Diamond Rubber Co. in the South.



December 7-22, Paris, France — Paris Salon.

January 2-10, New York, N. Y.—Importers' salon in Hotel Astor.

January 4-11, Montreal, Can.—Annual automobile show in the Drill Hall and Armory, under the auspices of the Automobile Club of Canada.

January 6-11, Cleveland, Ohio—Cleveland Automobile Show Co.'s exhibit in the Central Armory.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, Philadelphia, Pa.—Philadelphia Automobile Trade Association's exhibit in the First and Third Regiment Armories.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

January 21-26, Toledo, Ohio—Annual show in the Exposition building under the auspices of the Toledo Automobile Shows Co.

January 25-February 1, Providence, R. I.—Annual show of the Rhode Island Automobile Dealers' Association in the Providence State Armory.

January 27-February 1, Ottawa, Can.—Annual show of the Ottawa Valley Motor Car Association in Howick Hall.

January 27-February 1, Scranton, Pa.—Third annual show of the Scranton Automobile Dealers' Association in the 13th Regiment Armory.

January 27-February 1, Detroit, Mich.—Detroit Automobile Dealers' Association's Show in the State Armory.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

February 3-8, Washington, D. C.—Washington Automobile Show Co.'s exhibit in Convention Hall.

February 8-15, Hartford, Conn.—Sixth annual show of the Hartford Automobile Dealers' Association in the State Armory.

February 10-15, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Commercial vehicles only.

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MAKING READY TO HANDLE PARCELS POST BUSINESS

Appropriation Made to Hire Automobiles to Deliver Packages—The Zone System; Rates and Regulations.

Whatever may be the effect of the parcels post system, which goes into effect on January 1, upon the automobile and allied industries, it is evident that motor vehicles are expected to play an important part in the operation of the plan, for an appropriation of half a million dollars has been set aside by Postmaster General Hitchcock to be used in part for renting automobiles to transport the packages that will be handed over to the Post Office Department for delivery, commencing January 1st.

Chicago will receive the biggest part of the appropriation, its share being $15,000; New York, Boston and Philadelphia get $10,000 each, Brooklyn $8,000, St. Louis $5,000, Pittsburg $4,000, and Baltimore, Cleveland and San Francisco $2,500 each. After these, the ten largest cities, come the rest of the 1,600 postoffices that enjoy the benefits of city delivery, each receiving an amount proportionate to its volume of business. Postmasters are to be authorized to employ as many temporary employes as may be necessary to take care of the additional work involved in the handling of packages mailed under the new system.

That the parcels post will be of benefit to dealers in automobile parts, supplies and accessories is indicated by the fact that any package may be mailed that does not weigh more than 11 pounds and that does not measure more than 72 inches in combined length and girth. For instance, a package measuring 10 inches wide, 6 inches thick and 40 inches long would be just within the limit of size; or it might be long and narrow—say 5 inches wide, 3 inches thick and 56 inches long. Besides conforming to the regulations as to weight and size, packages must be mailed under the special stamps to be provided for the purpose; no others can be used. All sorts of farm products and manufactured articles will be mailable, provided they are not of a character injurious to persons handling the packages or to other packages with which they may come in contact, and provided, further, that they are not perishable within the time ordinarily required for their delivery. Books are excluded. It is clear that there are comparatively few articles, coming within the specified limits, that cannot be mailed. Automobile lamps, ignition apparatus, tools, inner tubes, pumps, clothing, horns and a thousand other things can be conveniently and cheaply delivered to customers through the agency of the Post Office Department.

As to the all-important matter of charges for parcels post delivery, it is expected that the greatest benefits will be derived by those who send small parcels comparatively short distances—a class of service which is decidedly expensive to send by express. A package mailed and delivered within a given postal district will be charged for at the rate of 5 cents for the first pound and one cent extra for each additional pound. If a package is to be delivered outside of the postal district in which it is mailed, but within the first parcels post zone—that is to say, within a circle having a radius of 50 miles or a diameter of 100 miles—the charge will be 5 cents for the first pound and 3 cents extra for each additional pound. A ten-pound package mailed on Manhattan Island, to be delivered on Manhattan Island, will cost 14 cents, while the same package mailed to Yonkers would cost 32 cents, And for each zone that is crossed the cost increases.

The whole country included in the parcels post system is divided into areas of about 900 square miles each. In each of these districts a point is selected as a center, and from this point circles are drawn marking the zone limits. The first circle has a radius of 50 miles, the second of 150 miles, the third of 300, the fourth of 600, the fifth of 1,000, the sixth of 1,400, and the seventh of 1,800 miles. All territory outside of the 1,800 mile radius is considered as within the eighth zone. The Philippine Islands, for instance, are in the eighth zone. Of course, the rates to the eighth zone are the highest, and amount to 12 cents for the first pound and 12 cents extra for each additional pound, or a total of $1.32 for a package of the maximum weight of 11 pounds.

A good idea of the parcels post charges from a given point to the various zones may be obtained by taking the rates on a five-pound package as an example, as follows:

Within zone 1, 17 cents
Within zone 2, 22 cents
Within zone 3, 27 cents
Within zone 4, 32 cents
Within zone 5, 37 cents
Within zone 6, 46 cents
Within zone 7, 51 cents
Within zone 8, 60 cents

Nash Loving-Cupped and Twice Banqueted.

C. W. Nash, the newly elected president of the General Motors Co., was presented with a loving cup by his friends in Flint, Mich., at a banquet tendered by the Board of Commerce of that city on November 29th. Later, on December 3rd, Nash also was the guest of honor at a banquet given by the officers of the General Motors Co. of Detroit. Nash practically grew up in Flint, where he first was connected with the Durant-Dort Carriage Co., out of which evolved the Buick Motor Co., of which he had been general manager.

Unusual Body Question not Decided.

Whether a customer who looks at a car body in a salesroom and places an order for one buys the body at which he looks or buys one like it, was the point which would have been decided had the case of Marie Marcella Mills against Carl H. Page & Co., Chalmers dealers in New York City, gone to trial in the Supreme Court for New York county, instead of having been settled amicably and discontinued, as it was last week. The complainant claimed she bought a limousine body in the summer of 1911 for $1,000, a lower price being accepted as a sort of summer rate for enclosed bodies. She also bought a regular touring car and the Page company agreed to store the limousine body until she wished it.

Later in the fall she sold the limousine body, or attempted to, but insisted that she be given a certain body. She was told that the body at which she had looked had been sold and that the terms of the sale to her would be complied with if she were given one like the sample. This did not suit her, so she commenced an action for $1,400, the winter price of the body.

Croce Building Seaside Truck Factory.

The Croce Automobile Co. of Asbury Park, N. J., which grew out of the 1,500 pound truck built in Croce's machine shop in that city, has been incorporated under New Jersey laws with an authorized capital of $250,000. In advance of the formal organization, work had commenced on a two-story brick and steel factory, 140 x 80 feet, at First and Railroad avenues in Asbury Park, which is so well advanced that it will be in operation early next year.

In addition to the designer, those interested in the company are ex-Mayor T. Frank Appleby and Harry A. Watson, Henry C. Winsor, president of the Asbury Park and Ocean Grove bank; Col. John W. Aymar, Stuart Appleby, Theodore Appleby, Richard W. Herbert, County Tax Commissioner; Samuel A. Reeves, Councilman Charles R. Zacharias of the Zacharias Garage Company; Councilman Charles Rugarber, Albert Robbins and E. W. and J. Voorhees Krymer of Elizabeth, N. J.

National Branch to Have New Home.

For the occupancy of its Chicago branch, the National Motor Vehicle Co., of Indianapolis, has leased a two-story building, 40 x 100 feet, which is to be erected at 2430-32 Michigan boulevard, the cost of which will be between $35,000 and $40,000. The structure will be completed by February 1.

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COURTESY AS A BUSINESS ASSET

Lack of It Is Responsible for Many an Unsold Machine—An Example: the Salesman "Didn't Know."

The prospective customer owned a car; he was a prospect, although the salesman did not know it. As a matter of fact, only the prospect himself knew it; he had become dissatisfied with his machine some two months before and was determined to sell it; he was much interested in a car that looked like big value to him—and the salesman who is the subject of this story would have been mighty eager to sell him if he but had a clue.

The P. C. dropped in to the garage frequently, for it was handily situated. He bought oil and gasolene there, frequently had his car washed, occasionally had it stored and all the time he was looking over the car sold there with the idea of making a deal in the spring. But of course the salesman did not know that, and because he was not a real salesman he did not even dream it. So instead of cultivating the P. C. in a friendly, helpful sort of way, looking after his interests when he came into the garage occasionally asking him in a sincere, really-want-to-know fashion if the service was all right, he merely gave him a nod and passed on his way, overlooking the sales opportunity that was staring him in the face three or four times a week.

Gradually the P. C., who was a friendly, approachable sort of a chap, began to feel that this salesman had something on his chest against him. He wondered what it was, and as the salesman took less and less notice of him he began to acquire a positive dislike toward the salesman. The culmination of it all was that the P. C. went into the garage office one night to inquire about a friends' car and the salesman, with his feet on the rail and a cigar in his mouth, leaned back in a dont-give-a-damn fashion and made his replies just as if it was a task for which he was receiving no money and therefore was not a bit interested. The information wanted was known to the salesman and he could have easily imparted it; but he lost sight of the fact that a real salesman is always on the job and always making friends, even though he may not see immediate chances of cashing in—and he was so short and snappy in his conversation that the P. C. then and there made up his mind that he would not care to have business dealings with him.

Gradually salesmen are beginning to realize the tremendous importance of friendliness and courtesy. It costs nothing; it wins friends and it makes sales. It is a business asset that grows with the expenditure of it.

VALUE OF CLEAN WINDOWS.

Keep your show windows clean. Too many windows will, from now on, be made a catch-all for everything that's loose. That is not good business nor is it wide-awake merchandising. Show windows cost just as big a share of the rent in winter as they do in summer and just as strong an effort should be made to cash in on them. And the first thing to do is to see that they are kept clean.

Clean windows are not only good business from the standpoint of letting the people see through them to what you are selling, but bright, clean windows always make people think of clean goods, business-like methods, up-to-dateness and a whole lot of other things that make for better business. How often have you heard your wife say, "I never like to go into Sleeper's store, the windows are so dirty. . . . I wonder how they do any business at all." Again, you are just as likely to hear her remark, "Lively's windows are so attractive! The windows are so clean and bright that everything looks good."

There is a temptation to be slack in winter months, for windows are hard to wash in winter. Let the other fellow neglect his windows if he wants to, but be sure yours are bright and clean.

DATES FOR DEMONSTRATIONS.

"Send me a catalogue and some literature about your car," said a gentleman to an automobile dealer. "Certainly," responded the dealer, and he did so.

A few days later he met the man.

"Going to have you give me a demonstration some time," said the man. "The catalogue description looks mighty good, and I am very much interested.

"We'll be glad to give you a demonstration at any time you set," was the response.

That was six weeks ago, and the demonstration has not been asked for yet and probably never will be

The lesson to be learned is the importance of setting a definite date for the demonstration when the prospect is in the mood and has just read the literature. Then is the time to settle the matter and get him thoroughly sold on the car. Delays are just as dangerous in such matters as at other crucial points in business deals. Make a definite appointment and see that it is kept.

PROMOTING SALES IN WINTER.

Radiator and bonnet "comforters" are now being generally used by winter motorists—and the number of those who drive all winter is constantly increasing. These "comforters" sell at prices running from $6 to $40, and there is a liberal profit in them for the automobile dealer. Most car owners are simply waiting for the suggestion to buy one. A word or a line to every customer probably would bring a liberal percentage of orders. Why not add to profits by seeking orders for them or for other essentially winter goods, or, better yet, for both?

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AWAKE-NDISING WORLD

DEMONSTRATORS THAT REPEL

Poorly Kept Car Often Sufficient to Check Progress at Beginning of Sale—Getting the Customer's Viewpoint.

Real salesmanship is that which keeps always in mind the viewpoint of the purchaser and caters to it. There is no better way to "cultivate" a prospect than to invest him with a sense of ownership in a car, even though he has not yet signed the contract. And as few persons are partial to the ownership of an old mud-marred, rattling car it is the wise salesman who makes his first impression with a car that has lost none of its pristine loveliness. There is something wonderfully appealing about a new car that well may be turned to account. Everything is so beautifully clean and bright, so smart and glistening, that it catches attention and holds it. There is nothing quite so delightful to the prospective motorist as the sense of satisfaction that is bred of the soft, clean cushions and the knowledge that the car and its occupants are somewhere near the center of attraction. The prospect begins to feel a sense of pride and ownership, and it is this feeling that the salesman should cultivate. It is true of many men and all, or nearly all, women.

All of which is suggested by the experience of an electric car salesman who made use of an old demonstrator to convey a prospective woman purchaser from her home to the salesroom. The car looked dingy; it did not have the gloss of newness, and moreover it was not of the model that the salesman was trying to sell. When he arrived at the door, the lady was decked in her finest gown, and when she caught sight of the disreputable demonstrator the look of mingled disappointment and disgust that overspread her features was the most eloquent sermon that could ever be preached to salesmen. The one concerned resolved then and there that never again would he call for a prospect in an old car, for which he had to commence to apologize as soon as he reached his destination.

It is a fact that not a few sales have been killed by the sight of a rattling old demonstrator, when, on the other hand, they might have been brought to a successful conclusion with aid of a clean, up-to-date car. A demonstrating car always should be kept spotlessly clean and bright. And there is the other side of the question which must not be lost sight of: When you call for a lady in an old car that looks the worse for wear she is altogether likely to think that she has been slighted, in which case it is far wiser never to have called at all.

HUDSON'S "LIMOUSINE WEEK."

Emphasizing the desirability of limousines at the time when the cold weather is first at hand, was the subject of a considerable campaign by the Hudson Motor Car Co., of Detroit, which staged a "limousine week" in its branches and dealers' establishments throughout the country, the display of enclosed cars being made simultaneously in all cities. The "stunt" was to make limousines a feature in the salesrooms for a week and to draw attention to them through advertising of various forms. It is a selling idea on which the Hudson people hold no patent, and with obvious modifications is possible with cars of any type or any make.

KEEP INSURANCE POLICY ALIVE.

A recent fire in an up-to-date little Michigan town of some 2,000 inhabitants wiped out an entire business block, entailing a loss in excess of $50,000. One of the worst sufferers was an automobile dealer whose insurance policy had expired but a few days before. He had been there for years and never before had there been a fire of any magnitude. He took a chance, and the chance cost him more than he could afford.

Insurance policies should be renewed before maturity and the stock always protected, as every good business man knows.

CARS AS CHRISTMAS GIFTS.

The advent of Christmas furnishes the germ of a selling thought that may be applied to advantage by the enterprising dealer. Automobiles have been used as Christmas gifts in other Yuletide seasons, and there is every indication that they will be so utilized again. Generally or quite often the gift is by the husband to the wife, and in such case the car selected should be one appealing to the feminine taste. There are few cars that have not some selling points of this sort, and emphasizing them to the proper person in the proper way may yield a commission. Right here it may be added that the dealer in electrics has a particularly fruitful field. What could cause more joy in the feminine heart than an electric left at the curbstone or the door on Christmas morning?

MAKING THE MOST OF IDEAS.

Ideas are of no value unless they are used. When you see a good idea grasp it and put it into execution at once. Imbue your employes with the same spirit.

Ideas spring from many sources; they occur to everybody. Don't be afraid to adopt a good idea because you did not think of it first. Encourage employes to present ideas and it will stimulate their interest.

HEED THE TEN-CENT CUSTOMER.

In every business it is well to keep in mind that the ten-cent customer of to-day may be the big buyer of to-morrow. Dealers frequently need to remind themselves, as well as employes, of the fact. For there are all too many evidences that it is neglected if not altogether forgotten.

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MIRRORS WILL REFLECT THE GARDEN'S GLORIES

Clever Decorative Scheme That Will Lend an Air of Spaciousness Without Sacrificing Beauteous Appearance—43 Pleasure Cars and Nearly 300 Accessory Exhibits for First Week.

It may interest those who care for statistics to know that some 200 tons of steel girders and more than a million feet of lumber will be used in transforming the interior of Madison Square Garden into a veritable bower for the reception of the cars that will form that part of the National automobile show which is to be held in the historic old building. At the new Grand Central Palace, where the other half of the forthcoming show, otherwise known as the Automobile Board of Trade's 13th annual automobile show, is to be held, for nearly every one now knows that the 1912 exhibition is to be the first New York show to be held simultaneously in "two buildings for two weeks," not quite so much steel and wood will be necessary, though there will be other trimmings and "fixings" galore.

Garden To Be a "Crystal Palace."

Of course, there will be other things besides steel girders and wooden beams in the decorative and constructive scheme at the Garden, and even though the whole of the scheme has not been disclosed, enough of it is known to ensure that the decorations will be "up to" those of the previous years, at least. In the first place, there are to be yards and yards of mirrors—square yards, of course—for which reason the designation "Crystal Palace" has been chosen by those who have the decorating in hand. The mirrors are to be placed all around the walls and their effect, it is expected, will be to lend a marked appearance of spaciousness—even if it can be obtained in no other way.

Also it has been decided that there will be no Turkish or other "rug" suspended over the heads of the spectators, and the roofs of the cars. Instead, it is promised, there will be an infinitely more pleasing "sky" of diaphanous blue material intended to convey the idea of light, fleecy clouds. In one respect the show will be very much like its immediate predecessor: The ornate lamp posts which last time did duty at regular intervals around the big hall will be brought out and dusted off and stood up in their customary places to mark off the exhibits. The signs, however, blazoning the names of exhibitors, will be slightly different and will be uniform with those used in Grand Central Palace. As heretofore, lattice-work and a superabundance of trellis will aid in creating the pleasing atmosphere which is sought.

Splendor of the Palace "Fixings."

For the Palace, the decorative scheme approaches very much nearer to maturity, for already contracts have been let and scenery artists have been busy for several months defacing perfectly good canvas to form "background" and "sky" effects. According to present indications, the decorative scheme at the Palace will be far more gorgeous and far more pleasing than it was at the last shows in either of the two buildings; certainly it will be a great deal more pretentious.



"CRYSTAL PALACE" EFFECT FOR MADISON SQUARE GARDEN

Oil Paintings to Cover the Walls.

On the walls of the main floor of the Palace will be a number of typical Long Island scenes, as well as paintings depicting the beautiful Delaware River, views in the Berkshires and scenes along the picturesque Hudson near West Point. The walls of the mezzanine floor will be given over to Western views, including paintings of the Grand Canyon of the Colorado, the gorges and passes of the Rocky Mountains, California vistas and sections of the cattle countries and prairies. The Gallery will be devoted to the sunny South and appropriate paintings depicting the beach at Ormonde, Fla., where so many speed records have been made and of Jacksonville and other Dixie points of interest will decorate the walls. Much trellis work and flowers in profusion will help to give the coveted outdoor atmosphere and, to relieve the monotony of the cars and chassis and accessories.

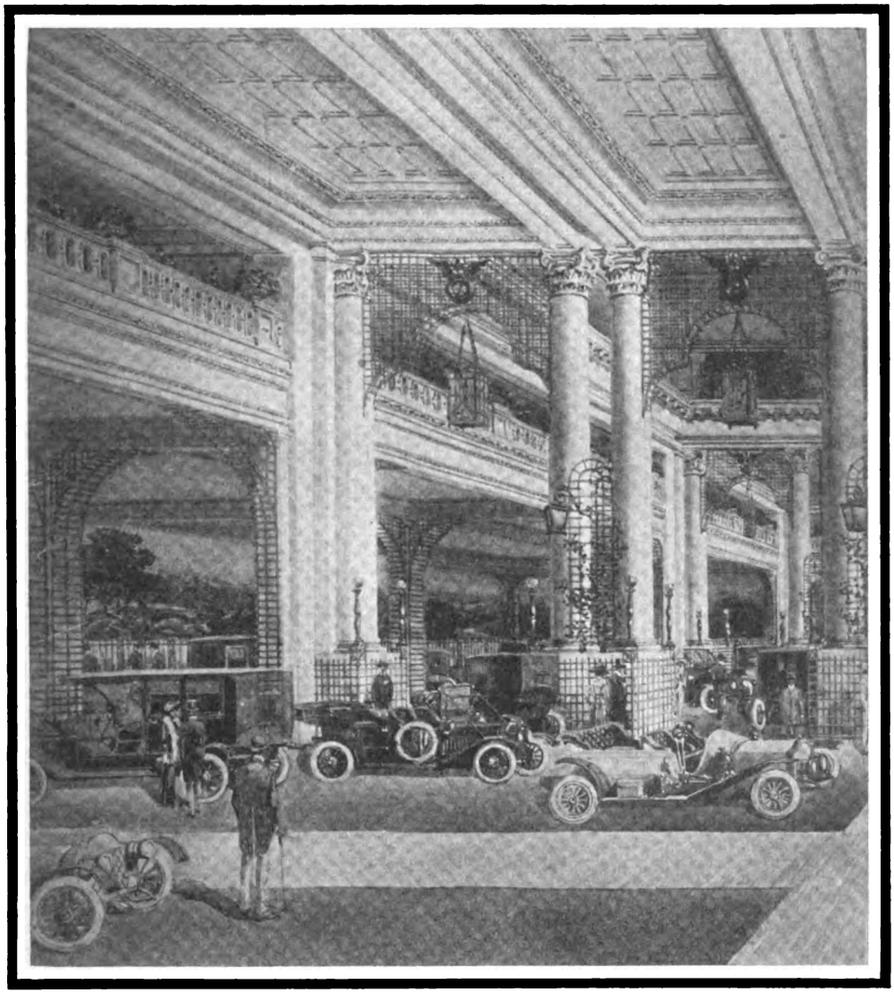
More Than 500 Separate Exhibits.

When the doors of Madison Square Garden and Grand Central Palace are thrown open to the public on Saturday night January 11th for a run of two weeks, the pleasure car and accessory maker holding forth until the 18th, when a quick shift will be

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PALACE TO BE A VERITABLE PICTURE GALLERY

Paintings That Will Transport Southern and Western Atmosphere to New York to Cover the Walls—Trellis Work and Greenery to Complete the Illusion—Exhibition Spaces Well Filled.



DECORATIVE TREATMENT ADOPTED FOR GRAND CENTRAL PALACE

made and trucks will replace the pleasure cars in both buildings and remain until the 25th, there will be some 530 complete and separate exhibits of cars and accessories on exhibit in the two buildings. From which it may be appreciated, in view of previous shows, that there is not a very great deal of space going to waste.

On the Garden list of the first week there are upward of 43 names of pleasure car makers and 272 names of accessory manufacturers. The list, therefore, is slightly smaller than was the case last year during the pleasure car week of the Garden show, though this fact is no indication that the exhibit will be any the less comprehensive. It is pretty well established that the deficiency in the number of individual makers will be more than made up by the greater variety of wares displayed by the smaller number of exhibitors. There is little reason to expect that there will be apparent any very great gaps in the well-ordered lines of exhibitors.

Exhibitors in Grand Central Palace.

Grand Central Palace, during the first week, will house at least 46 makers of pleasure cars in addition to 25 motorcycle displays and more than 100 separate exhibits of accessories This list also is smaller than was last year's, except with regard to accessories, of course, which were conspicuous by their absence at the last Palace show. During Part II of the mammoth show, designated as the commercial vehicle week, some 25 manufacturers of commercial vehicles will display their wares in the Garden and in the Palace the list of names already numbers 41. Taking the cue from last year's exhibition, it is altogether likely that these numbers will be slightly swelled, at least, when eleventh hour exhibitors at length make up their minds to sign space contracts. As was the case at the last show, nearly all of the accessory manufacturers will remain for both weeks of the show.

In the Palace, car and accessory exhibits will be confined to the main and mezzanine floors; accessories will be exhibited exclusively in the balcony.

Salesman's Commission Basis of Suit.

Probably nothing causes more dissension among automobile tradesmen than the matter of commissions, and one of the numerous altercations now is winding its way through the New York City Court, wherein the judges are asked to decide whether the Abbott-Detroit Motor Co. should pay a commission of $310, alleged to have been earned by Samuel Warrington. Warrington has assigned his claim to Frederick W. Sturzel and the latter is the plaintiff in the action.

Warrington's claim is that he was engaged in May, 1911, by the Abbott-Detroit company in New York City to secure prospective buyers of cars and that his services resulted in the sale of a $1,550 car to one D. C. Sanford; the commission, which he claims was the difference between $1,550 and $1,240, was demanded and refused. The Abbott-Detroit company enters a general denial. The cause was restored to the general calendar last week after having been permitted to lose the position which it originally held.

Delayed Delivery Costs Dealer $500.

Delaying the delivery and sale of a car from Saturday, 23d ult., to Monday, 25th ult., cost Wilfred H. Cote, a dealer in Fall River, Mass., $500. He was to have delivered the car to James Kershaw, but on Sunday, 24th ult., it was partially destroyed by fire, the damage amounting to $500. On Saturday Kershaw offered Cote a check for $2,400 in payment for the car, an Everitt "six," but Cote asked him to wait until the following Monday and Kershaw did so.

Truck Show, too, for Kansas City.

For the first time, the Kansas City Motor Car Dealers' Association, which promotes the annual show in the Missouri city for which it is named, is to draw a distinct line between its pleasure car and commercial vehicle exhibits. Pleasure cars will hold the boards from February 17 to February 22 and from February 24 to February 27 the space will be devoted to the display of commercial vehicles exclusively.

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FLANDERS, OF PONTIAC, FAILS; TWO MILLIONS GONE TO WASTE

(Continued from page 6.)

bution. The committee, therefore, recommended the appointment of a receiver.

Many things combined to bring about the downfall of the Flanders enterprise. There are those who maintain, however, that the situation might have been saved had Flanders devoted proper attention to the business and not permitted his thirst for millions to carry him off his feet. He seemed not content to acquire them slowly and "he asked nothing better than a gambler's chance to play for big stakes," to quote the language of a not unfriendly acquaintance.

For two years, mergers have lain heavily on his brain as a short cut to the millions which he craved. Two mergers which he shaped up failed to come to a head, but undismayed, he was at work on another one which was to be the biggest and best of all when, as before, something happened The Studebaker interests held $200,000 worth of stock in the Flanders Mfg. Co. and with this biggest merger in view, and in order to assure control, Flanders within the last six months had purchased $150,000 worth of the Studebaker holdings at 50 cents on the dollar.

When his latest plans went awry, the reorganizers of the United States Motor Co., who know a thing or two about mergers and million-making, cast eyes in Flanders's direction, and it was not long before they "got together." In order to secure his services they agreed to take over the Flanders Motor Co., which is Flanders's very newest venture, which carried with it a once mysterious six-cylinder car in which more millions were seen.

Directly and indirectly, the development of this "six" contributed to the undoing of the Flanders Mfg. Co. It was covertly developed while Flanders still was drawing $30,000 a year, plus royalties, from the Studebaker Corporation, and the fact did not add to the good feeling between the Studebakers and their highest priced employe. Before the tension became acute, the Flanders Mfg. Co. was making Studebaker parts to the value of $1,000,000 per year, but when the Studebakers discovered what was going on and recognized that Flanders was developing competition for them, they cancelled the parts contract and placed it elsewhere. The effect was felt almost immediately.

How the Flanders Mfg. Co. kept alive during the past year is more or less a mystery. It can be attributed only to the glamour with which uncommonly adroit pressagentry cast around the name Flanders. For at all times the manufacture of its most exploited productions, electric vehicles and motorcycles, has been near to the minimum, and those familiar with the situation were well aware that before the end of the company's first year, meeting the bi-monthly payroll often proved a soul-searing performance. But somehow the evil day was postponed until it could be postponed no longer; and all the while the debts piled higher and higher. However, not even pressagentry's last spectacular stunt—that of paying for the privilege of having a Flanders electric car "blaze a path" from Detroit through the mulish mud to New Orleans—could much longer delay the inevitable. Few know how great was the cost of that stunt, but it is known that the item of telegraph tolls alone amounted to nearly $7,000.

The Flanders Mfg. Co. represented the amalgamation in January, 1911, of five separate companies which Walter E. Flanders had fostered after emerging from a legal fight with the Studebaker interests, which netted him nearly a million dollars and more fame than ever he had known before, which good fortune was shared in lesser degree by several of those who were near to and who had aided him. Remaining in the service of the Studebakers, he formed first the Grant & Wood Machine Co., which acquired a somewhat historic factory in the little town of Chelsea, Mich., where it was to have produced special machinery and steel balls, but did not produce a great deal of either. Later, in Pontiac, he successively launched the Vulcan Gear Works, the Pontiac Drop Forge Co., the Pontiac Foundry Co. and the Pontiac Motorcycle Co., the latter capitalized at $600,000 and expected to prove the most profitable of the several undertakings. The authorized capital of the Flanders Mfg. Co. was $2,500,000. Flanders's personal attorney, who had guided him through the Studebaker fight, was made its president and general manager, but about a year ago they fell apart and since have gone separate ways. Flanders, who at all times maintained an office in the Pontiac factory and exercised general oversight, succeeded to the presidency and a young man who brought with him his own and his family's capital became general manager.

From its inception the Chelsea plant had proven a gigantic "white elephant." It is a large, imposing structure, originally built on an idealized scale with the funds of the taxpayers of Michigan by a defaulting state official; it contained a library, a theatre, a gymnasium, a swimming pool and other things designed to make the workmen happy, but for some reason or other none of its several owners have been able to lift it out of the slough of despond or make of it other than a liability.

Flanders himself is a big, hearty, overrated man, who, when he is not strenuously bellicose, is brimming with good nature of the sort that has won for him many friends and that helped his cimpony out of many holes when hope seemed vain. He is not easily swayed, but the one man who has swayed him most and oftenest is his press agent, E. Leroy Pelletier, who came through the Studebaker fight with him and who since has kept the Flanders halo burnished so brightly that on occasion it has caused men to blink. The two are physical contrasts. One is as small as the other is large, but the little fellow has a great head; he is fairly charged with nervous energy; is a brilliant, plausible, rapid-fire conversationalist and a clever writer, and is hospitable, ingratiating and likable to a degree and resourceful far, far beyond the average. In the course of a varied career, he has had experience in the Klondike and as an advance agent for a circus, which partly may be accountable for the fact that in the art of "putting them over" he has few peers. Even the great Barnum himself would have found him a valuable assistant. For he can almost make himself believe there are moonbeams in cucumbers—and induce others to share his near-beliefs.

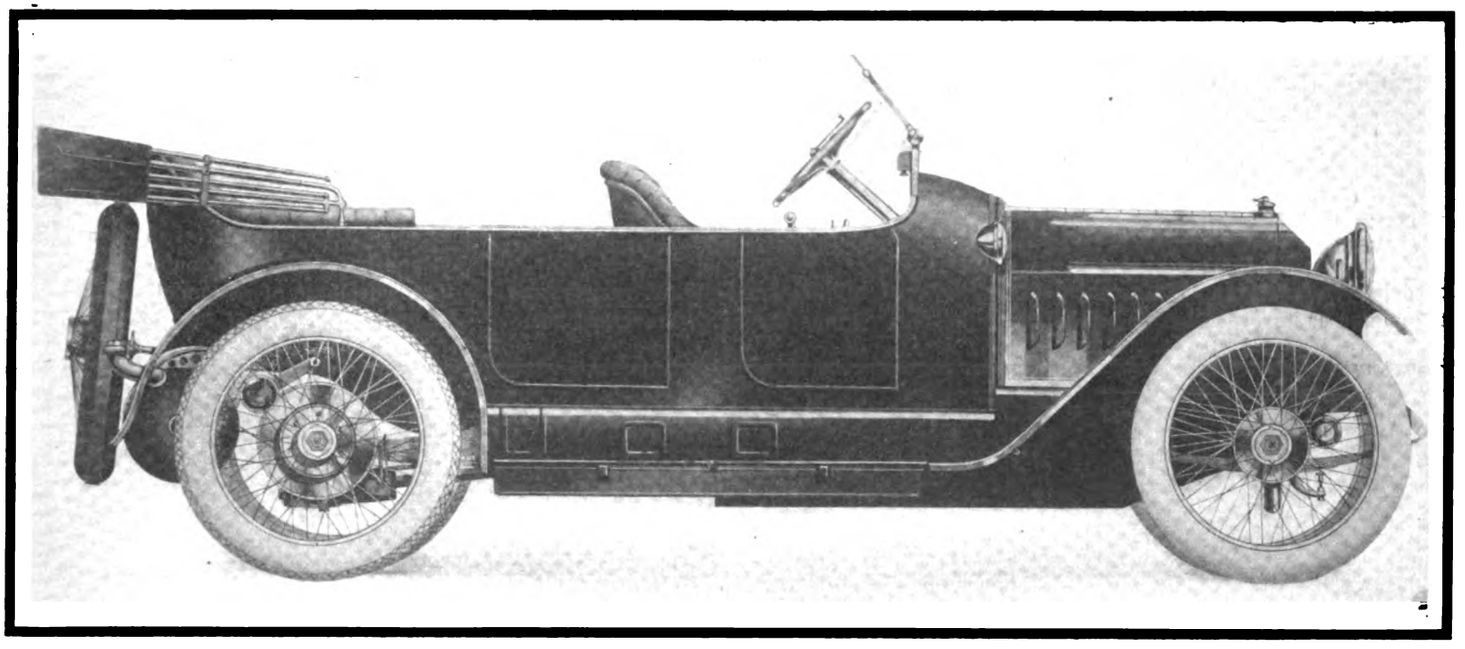
He interested Flanders in motorcycles and when Flanders undertook to build them he had in mind the production of a twin-cylinder machine at the price of a single, which everyone since has believed would have brought a fortune to the Flanders coffer. But the first twin had no sooner been built than Flanders's "shadow" successively saw two rainbows in the sky with even more millions at their ends, one of them a $100 motorcycle. Both were mechanical or commercial impossibilities. Two or three hundred thousand dollars and a year's time had been frittered away before a purely conventional machine made its appearance, at a conventional price, and during the company's two years' existence less than 2,500 were produced when 30,000 or 40,000 had been planned. Despite this expensive "rainbow chasing," an electric vehicle appeared in the sky and promptly was pursued. It had worm drive and otherwise was mechanically radical, as also was the price. Some 3,000 orders were booked, but less than 100 cars have been produced. The first were full of "bugs," as was frankly admitted, and the radical price too low for profit; it became necessary to add $500 to it.

While the motorcycle and the electric vehicle broke the Flanders Mfg. Co.'s back, so to speak, they were not the only rainbows that were chased by Flanders and his intimates. A tree sprayer and a portable light-your-own-home-with-electricity outfit were among the things in which more millions were "seen" and many more thousands lost—no one knows how many.

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EDWARDS-KNIGHT A CAR OF APPEALING FEATURES

First Product of a New Company Reveals Numerous Characteristics Which Are Old Separately But New Collectively—Wire Wheels, Worm Drive, Lanchester Springs Distinguish All Models.



EDWARDS-KNIGHT FIVE-PASSENGER TOURING CAR WHICH SELLS COMPLETELY EQUIPPED FOR $3,500

After more than a year of careful preparation, the Edwards Motor Car Co., of 1790 Broadway, New York City, with factories just across the East River in Long Island City, at length has launched its first product—the Edwards-Knight car—and, as was to be expected, it is a car that is complete in every respect and one which, differing materially in a number of ways from every other American car, reflects what is considered by the makers to be the most modern exemplification of automobile building.

Due to the adoption of the Knight motor by a number of American manufacturers, this type of engine has ceased to be a novelty; it rapidly is becoming almost commonplace. Nor is the combination of Knight motor and worm drive as unusual as it was, for similar construction already has been introduced by at least one American manufacturer. Similarly, a variation of the Lanchester type springs with which the Edwards-Knight car is equipped also has become familiar on American roads, and wire wheels are becoming so common as to cause scarcely a turning of heads.

In the Edwards-Knight car, however, not two of these features, or even three, serve as distinguishing marks; all of them, and more, are incorporated in the car in such a way that the tout ensemble cannot well fail to attract attention. But one chassis is produced, though on it are mounted bodies in such variety as to leave little to be desired.

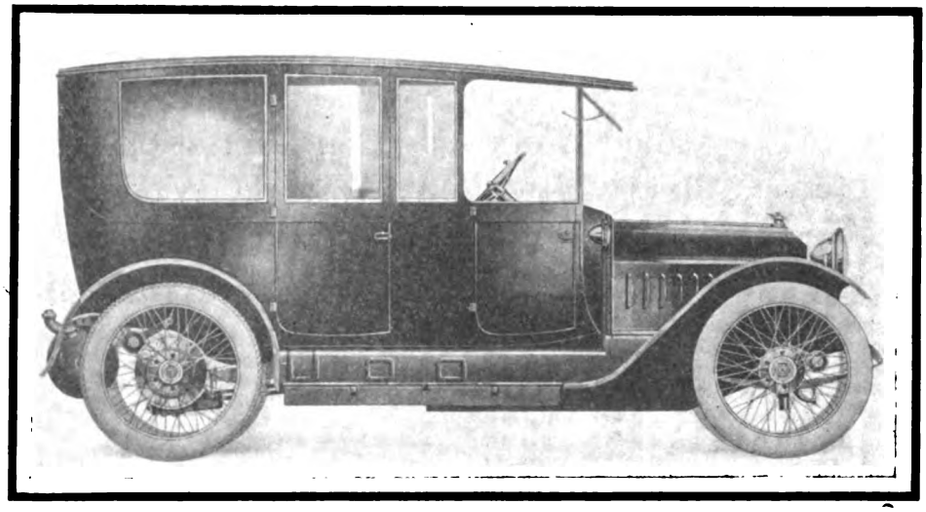
The bodies in each case are straight-line, flush-sided creations with deep scuttle dashes, and exhibit a careful blending of lines and proportions that tends to subdue the real size of the cars without in the least detracting from their unquestionable dignity. The five-passenger touring car and torpedo model, which are much the same except for a slight difference in lines, and the two-passenger roadster and speedster models list at $3,500; the limousine sells for $4,600 and the landaulet for $4,700

In common with modern practice, the prices include complete equipment as a matter of course, and quite as much as a matter of course the full equipment includes a combined electric lighting and engine starting system, the U. S. L. system, which embraces a combined generator and motor unit which takes the place of the flywheel, being used. Wire wheels, which with a number of other makes of car are listed as optional equipment, are standard equipment on the Edwards-Knight, with wooden artillery wheels offered as optional. The remainder of the equipment includes a Golde "one-man" top with envelope and side curtains, one-piece windshield, bulb and electric horns located under the engine hood, one extra wire wheel (quick detachable rims), tire irons, shock absorbers, power driven tire pump, full set of tools, including tire repair kit, pump and jack, robe and foot rails. Closed bodies include electric interior lights, as well as the usual toilet articles. Trimmings are in nickel plate.

In the design of the Knight motor that is used, there is little that departs specifically from the generally accepted construction that has become familiar. Cylinders are cast in pairs and measure 4 x 5½ inches. Though the horsepower rating thus is but a nominal 25, it is a characteristic of Knight motors, as it is with many others, that the actual brake horsepower developed is considerably in excess of the theoretical indication; the Edwards-Knight motor develops between 40 and 45 horsepower.

Ignition is effected by means of a high tension Simms magneto, of course, and mixture is furnished by an S. U. carburetter, the American rights for which some time ago were acquired by C. G. Stoddard, who is president of the Edwards company, and his associates. Lubrication of the motor is by means of a pressure feed system, the heart of which is a plunger pump. A dash oil gauge serves to indicate that the oiling system is operating properly The oil supply is regulated by interconnection with the throttle in such a way that the amount

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WELL-PROPORTIONED LINES OF EDWARDS-KNIGHT LIMOUSINE MODEL

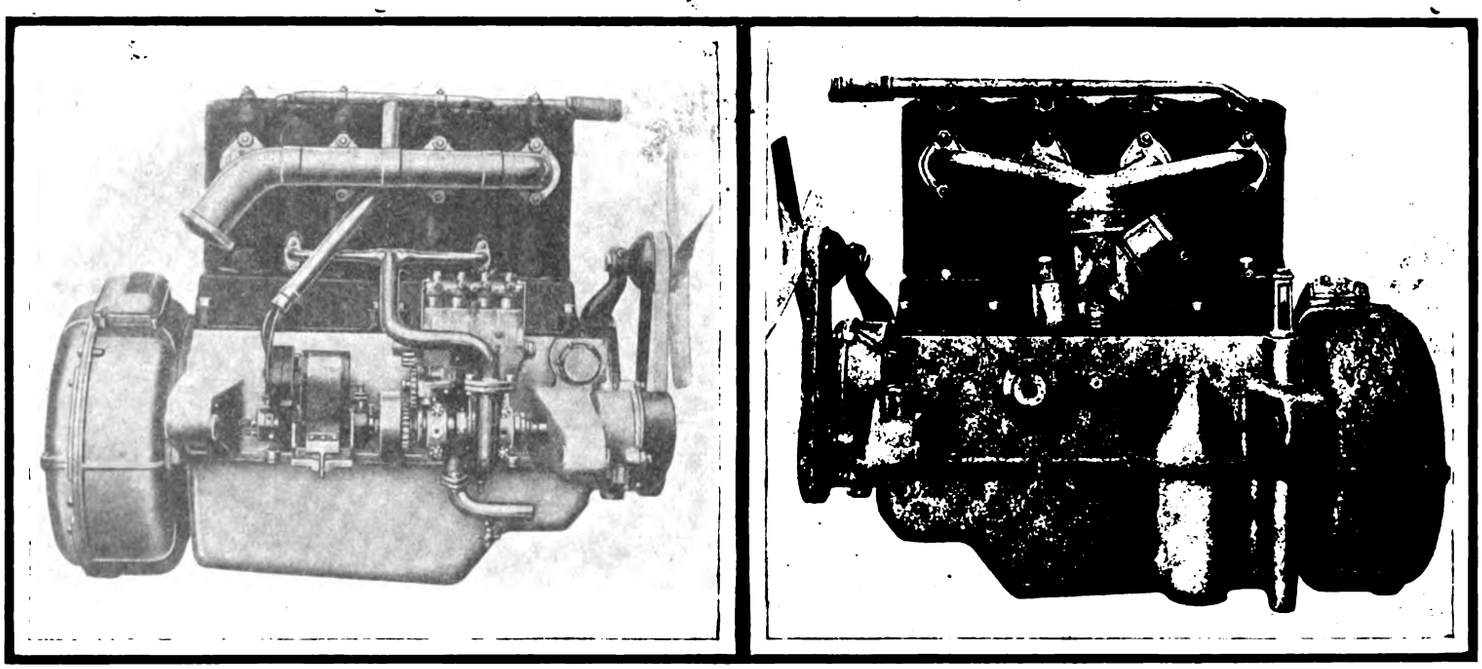
of oil delivered is in proportion to the needs of the engine as governed by the size of the throttle opening. Efficient motor cooling is ensured by a circulating water system; the pump is of the centrifugal type and the radiator is of the "V" honeycomb type.

In the transmission elements, the clutch, which is of the dry multiple disk type with steel against Raybestos surfaces, is combined in a rigid unit with the gearset. The latter is hung in the waist of the chassis and provides four forward speeds in which direct drive is obtained on the third speed with fourth speed an "overstep." This location of the gearset makes simple the adoption of center control.

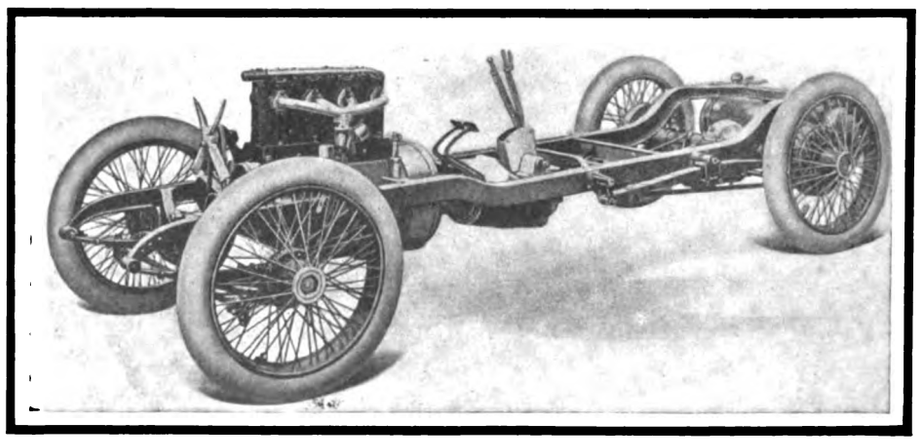
In designing the spring suspension of the car, cognizance has been taken of the necessity for maximum resiliency with the minimum of side sway and bounce, and at this end the front springs have been made of the conventional semi-elliptic variety and the rear springs are of the reversed semi-elliptic type, or, as they are better known, the Lanchester type. Further increasing the easy riding qualities of the cars, and their stability on rough roads, specially designed shock absorbers are fitted to both front and rear springs By way of permitting the rear springs full play, the drive is transmitted through radius rods.

The rear axle is of the conventional full-floating type, except that worm drive instead of the more familiar bevel drive is employed; the front axle is I-beam in section and is constructed to afford a more than ordinarily ample factor of safety. Both sets of brakes are carefully equalized and are mounted on rear axle drums measuring 14 x 2 inches; the emergency brakes are internal expanding and the service brakes are external contracting. The frame is formed of 3/16th inch steel in channel section and has a 4½-inch double drop.

The wheelbase of all models is 120 inches on a standard tread of 56½ inches and the wheels are shod with 36 x 4½-inch tires both front and rear.



INTAKE AND EXHAUST SIDES OF EDWARDS-KNIGHT MOTOR, SHOWING ENCLOSURE OF U. S. L. SYSTEM



PERSPECTIVE VIEW OF CHASSIS, SHOWING LANCHESTER SPRINGS

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REILLY HAS A LITTLE INTERVIEW WITH REILLY

Inspects Himself from the Standpoint of an Outsider with a View of Discovering Possible Defects—Shows the Sales Manager How These Inspections May Be Helpful to Dealers and Others.

Drizzling rain and a chill in the air may have had something to do with the quiet that prevailed in and about Reilly's salesrooms on this particular afternoon; since his return from dinner few cars had passed the door and pedestrians were almost as scarce. Not a person had crossed the threshold of the salesroom, and the only audible sounds were those which occasionally came from the repair shop and service department at the rear of the establishment.

Reilly's Meditation Interrupted.

Reilly sat at his desk deep in thought; the office girl, in her adjoining office, was lost in a book and the only perceptible movement was the smoke which now and then curled upwards from Reilly's vicinity. He did not hear the approach of the rubber-shod Sales Manager, who, tiring of railway travel on a day when the drizzle obscured all view of outdoors, had dropped off in an endeavor to put a little sunlight into an unpleasant afternoon by a call on his best dealer, and he was inside the door and halfway across the salesroom, headed for the office, before the proprietor was aware of his visitor's approach.

"Going out of business? What's the matter here to-day?" demanded the Sales Manager, as he invaded the office. "You look worried; what's on your mind? Wondering what you'll get for Christmas?"

"That won't require much wondering," asserted the dealer, as he arose and extended his hand in greeting.

"You certainly were having an awful think when I came in," went on the caller; "got something on your mind?"

"No, just thinking," was the reply.

"Of what?"

Explaining Theory of Self-Criticism.

"Myself," answered Reilly in a feigned falsetto.

"Getting egotistical in your old age, aren't you?" questioned the Sales Manager. "Can't you find a better occupation than thinking about yourself? You sure are a fine specimen for thought!"

"Don't you ever think about yourself?" asked Reilly seriously.

"I suppose I do, but I don't make a business of it."

"Well, that's where we differ; I make a business of it—at times."

"Getting worse every day," was the Sales Manager's bland comment, as he waved his hand toward the object of the remark.

"Oh, I don't know," said Reilly, as he tipped back in his chair and hooked his thumbs in the armholes of his vest. "If some people I know sat down and thought about themselves once in a while they'd



"I SET REILLY UP AND TOOK A GOOD LOOK AT HIM"

know more than they do—about a great many things."

"Some pet theory, I suppose."

"Good one, though," insisted Reilly. "Did you ever hear the old saying that a man's enemies are his best friends because they will tell him his faults, while his friends never mention his shortcomings? And once a man knows his faults he ought to be able to correct them. When you came in I was finding fault with myself, you might say. I was performing the little psychological stunt of coming out of my shell and looking at myself, just as other people see me, and learning just what sort of a fellow I am."

"Peculiar mind, that of yours," commented the Sales Manager. "Where did you acquire that kink?"

"I don't remember; I've had it a long time; but it's good," replied Reilly. "Why don't you try it?"

"Well, just how do you go about it—this 'getting out of your shell'?" queried the Sales Manager.

"We will now give a demonstration," said Reilly, with the bow of an actor who responds to an encore. "Here you are, sitting in your chair. You're Jim, the Sales Manager. You've been more or less successful, in a way, because you have worked up from salesman to a manager of salesmen. You're getting, let us say, $5,000 a year. If you have any personality at all you want to do better; everyone ought to want to climb in some direction.

Demonstrating on the Sales Manager.

"Let this be a sample of one line of thought: You look around and see what places there are to which you might aspire. For one thing, you might look for a better salary. How are you going to get it? By being worth it, of course. How are you going to be worth it? Right here is your chance to do some thinking. Look at the way Jim the Sales Manager does things and the things he does; see if you can't think of something he could do that he isn't doing, and that would be of value to the company; try to think of improvements on the way he is doing things now. Look over the little details, analyze the whole situation and see if there is room for improvement in any spot.

"I'll tell you confidentially what I was thinking of when you broke the couplings in my train of thought. Getting on, with me, consists of doing a better business; it's good now, but I want to make it better. There must be some way to make it better; what is that way? The general answer is to sell more cars, and I was trying to think some way of doing that; also, I was wondering whether a better stock of acccessories wouldn't help. I was only half through my think when you came in.

One Result of an Inspection.

"A man's personality is worthy of some consideration, too. I also had your friend Reilly on the inspection block and took a good look at him. I don't think he is such a disagreeable individual, but I thought of one little habit he has fallen into that he's

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going to cut out. Several times lately when people were talking to him he has found himself letting his mind wander until for an instant he would lose track of what they were talking about. The result was that sometimes he had to ask to have a remark repeated. He's not going to do it any more; he's going to be an intent listener when anyone is talking to him."

"Since you are such an expert analyzer of personality, perhaps you can pick a few flaws in my makeup," suggested the Sales Manager. "It's your duty, anyway, if you're such a good friend of mine."

"You promise not to be offended?" questioned Reilly.

"By all means."

A Gruff Voice as a Fault.

"Well, for one thing," said the dealer, "you probably never have noticed the gruff tone of voice in which you talk over the telephone. When you are face to face with anyone and they can see you it doesn't sound at all bad, but when you start to talk over a telephone you sound as if you were a regular bear, in an awful hurry and ready to bite a man's head off. A timid person would hang up before he was half through with what he had to say. Your voice naturally is sharp, and you talk fast, which is the combination that is to blame. You never noticed that did you?"

"No," confessed the Sales Manager, "I didn't. But one thing leads to another, and without any 'fessing up' as to my personal shortcomings I will state that I have already thought of one or two other little things that might as well be remedied. Also, when I get back to the office or the house I'm going to walk around to the other side of the desk and take a good long look at myself. I'm going to suggest it to some other people, too."

"This self-inspection applies to any man living," continued the dealer. "There is no man who is perfect, and perhaps some of his defects are so small that no one would think to call them to his attention; but their elimination would do no harm. There may be an engineer in your factory who is not as thorough as he might be; if he has average intelligence he ought to be able to discover the fact, and if he cares at all he should be able to remedy it. The man who cannot improve himself or his work without the assistance of someone always will be an assistant; he'll never be a man who directs men or who tells them faults.

Getting the Disinterested Viewpoint.

"But it hardly can be called self-inspection; it can be made more than that. It isn't you looking at yourself; it's someone else looking at you. You have to transform yourself into another person and look at yourself from that absolutely impartial standpoint of a disinterested person. In your own mind you may believe that certain things you've done are red-hot stuff, but are they? Just take the view of a rank outsider, study these things, look them over from every point of view, compare them with what others may have done or what might be done and work out the unbiased opinion of a total stranger. You may be inclined to flatter yourself, but if you can get this 'other person's' opinion you may feel differently."

Wherein the Dealer May Benefit.

"But suppose this 'other person' flatters you," suggested the Sales Manager.

"If he's truthful, all right; but don't let it puff you up. So many dealers would be better dealers if they only indulged in a little self-criticism. They never try to put themselves in the position of the car owner and customer. The dealer or garageman naturally is inclined to believe his business is conducted very nearly as it should be. But is it? he should ask himself.



"I ALWAYS TRY TO PLACE MYSELF IN THE FACTORY'S POSITION"

A Fault That Reilly Overcame.

"Take my own business, for instance. In one moment of looking it over from an outside standpoint, I got to wondering how some of the public looked upon my house rule of making a charge for telephone calls. I am limited to so many calls a year, and while I seldom go much above the figure, I used to feel that strict business rules compelled me to make a charge when an outsider used the 'phone. I realized that this was offensive to some people, so I wiped out the rule and it hasn't made much difference in my bills, either. Also, there is this way of looking at it: it's worth something to get a man into my place of business where he can see my wares.

"I imagined myself to be one of the numerous public and imagined myself coming into the Reilly establishment and, while there, happening to remember I had an important call to make. Reilly said to me, 'We are compelled to make a five-cent charge for calls.' Of course, I paid, but I thought it pretty small. But that was years ago, when I first started in business, and it's a fool rule, anyway, in my case, at least.

"I wonder if your attitude is one reason why the factory gets along so well with you," interrupted the Sales Manager.

Imagining Oneself the Factory.

"Well," slowly responded Reilly, "I always try to place myself in the factory's position as nearly as I can whenever I am inclined to differ in opinion with the company. One point is this: Few men are absolutely unreasonable, and they generally have reasons for acting as they do. Instead of putting them down as on the wrong side, try to analyze the situation and see if you can't learn how your own attitude will be viewed. If a man really is unreasonable, you can only handle him as best you can, and let it go at that. I used to get sore over your deposit policy, but I can see now why you felt yourselves right, and you have a right to run your own business in your own way.

"Even the president of your company, if he doesn't do so now, could broaden his mind and possibly improve himself if he would endeavor to look at himself from the standpoint of those with whom he comes in contact. Maybe such a man is gruff and abrupt; does it do any good? One of the busiest men I ever had occasion to visit gave me but two minutes of his time, but he was so pleasant about it that I left under the impression that I and not he had terminated the interview.

One Other Method of Self-Inspection.

"If you can't 'get out of your shell' and make an unbiased inspection of yourself there is one other way: Find faults in other people—don't advertise them, of course—and then investigate and see if you have any of these same defects. You'll be surprised how imperfect you are."

"What great flaw is there in Mr. Reilly?" asked the Sales Manager.

"The principal thing," replied the dealer, "is the top of my head. Whenever I try to talk to anyone they keep looking at the top of my head and don't seem to pay much attention to what I say. I'm trying to grow a thatch."

"Huh!" was the sarcastic answer, "better practice on a smaller piece of ivory first."

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Solutions of The Used Car Problem

In Competition for Motor World's Cash Premiums of $50, $25, $15 and $10 for the Best Four Articles Dealing With the Subject.

By C. M. STRIEBY, Chicago, Ill.

Good salesmanship and co-operation of both manufacturer and distributor will do more to solve the used car problem than anything else.

There seems to be a tendency to keep throwing the blame from one to another, without arriving at any conclusion, and as a matter of fact, all parties concerned--the customer, the agent, and the manufacturer—are really at fault.

It is impossible to put the customer's car on any given basis or percentage. One man will take greater care of his car than another. It is certainly unreasonable and unfair to expect an equal basis of trading in this instance.

The dealer prefers to place the blame on his competitors —other dealers—who, he claims, can allow higher values for used cars than he can—or he tries through trade associations to work out a basis of trading values, when he knows that just so ong as the world turns around, it would be impossible to get every dealer in his territory to think and act just as he does, and be strictly honest about it. Then again, the season of the year often influences the value of trading in cars.

The manufacturer, in many instances, prefers to lay the blame on the dealer, attributing it to over-zealousness in making sales, or possibly, the dealer's lack of business ability —to his not being a salesman; but if this same manufacturer were asked to come in and take over the business, and carry it along and show a profit, with so many cars to trade in, there is no doubt but that he would politely but firmly refuse the undertaking.

The owners of motor cars possibly keep in closer touch with the developments and improvements on the new models, as they appear, than in any other line of business. A desire for a new car is created in the owner's mind. His next thought is—"How much can I get for my old car?" And right here is where the remedy should be applied by salesmanship; for a man with this second throught standing out as prominently and clearly as it does in the usual buyer's mind, is in no fit condition for reasoning on price. It has been said in other articles, and is only too true, that even the best men will resort to all of the trickery and conniving that one can imagine in order to get a high price for their used cars. Just why this is so, it is unnecessary to discuss here, but the fact remains.

If the salesman will immediately start talking the many fine points of his new model; its advantages, etc., with the idea of creating in the customer's mind a further desire for the new car, he will at the same time, be automatically reducing in the customer's mind, the great necessity of securing an unreasonably high price for his used car to complete the sale. In other words, the salesman will be working along the lines of least resistance and reducing the number of factors required to complete the sale and get the money. This, of course, requires good salesmanship, for when the matter of value in trading cars comes up the second time, it must be treated effectively and quickly.

This can be backed up and strengthened by the dealer or agent creating for himself an impression on the buying public, that would show the average business man of today that it would be desirable for him to do business with his house. Attention, good service, a respectable and clean place in which to do business, will make boosters of the users of previous models or other makes of cars which the agent has sold.

As a matter of fact, and from a strictly business standpoint, one agent can do as well as another in the matter of value in trading cars, and no agent is doing his customer a favor, where he trades in a car at a prohibitive price, because it will only be a short time before that agent will not be there to look after the cars that he has sold.

Add to this the strength of the manufacturer's backing and co-operation, let him select for local representatives men of good business ability, men of good standing, and have this as a greater requirement, rather than those whose only asset is plenty of deposit money.

By W. A. CLEMENTS, Richmond, Ind.

The most efficient solution of the problem of used or second-hand cars, which is becoming a more serious one each year to both dealers and manufacturers, is to establish clearing houses for used cars.

These can be one to each town, or one to certain districts. They can be established either by dealers' associations; by one dealer as a side line; or by a new dealer who wishes to go into this phase of it particularly.

The valuation placed on cars should simply be a certain percentage of the list price for each year that the car has been out of the factory, this valuation, however, subject to a rigid examination of the car, and dependent, to a certain extent, to the use it has had and the distance it has been run. A certain mileage should be allowed for each year; i. e., supposing 4,000 miles each year, which is a rather liberal average, should be allowed; thus, a car in three years should be considered as having given 12,000 miles. If it has not given this amount of mileage, or has been given more, this amount should be taken as an arbitrary settlement.

There could be a committee appointed from dealers, or automobile experts, to decide on the cars' condition.

When a customer who has an old car wishes to buy a new one, he should take up the matter with the dealer, who will then take up the matter with the clearing house and allow a certain price on the used car, and no dealer should be allowed to make a larger allowance than the amount fixed by the clearing house officials. The dealer would know the exact amount to allow for the used car and the customer would know the exact amount to be allowed him.

A great point in favor of this system is the fact that there would be a central place for anyone desiring to purchase a used car to go and look over the entire list of cars which are purchasable. The writer knows personally of several cases where a man who simply wanted a used car and could not afford a new one, paid an extremely high price for a used car of poor quality and in poor condition, simply because he did not know of much better bargains which were offered and which he would have purchased had he known about them.

Two other points should be emphasized in this matter: The customer who has a used car should not expect too much for it. And the customer who buys a new car should pay as nearly list price as possible in order to get the service which can only be rendered by dealers who make enough profit to keep service up to the proper standard.

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PUTTING NEW BEARINGS IN OLD CONNECTING RODS

Adjustable Jig That Is Easy to Make and Hard to Wear Out—Suitable for Any Rod.

When motor bearings of the babbit-lined type become worn to such an extent that adjustment no longer is practicable, the usual practice is to provide a new lining of the soft alloy, melting the metal and running it in. If the work of casting the lining is not carefully done there is a probability that the metal will contain blowholes and will not properly fill the spaces left for it. If the thickness of the lining is excessive, not only will there be an unnecessary amount of labor involved in the finishing process, but there will be a waste of babbitt, which, in the grades used for the bearings of high grade motors, is expensive.

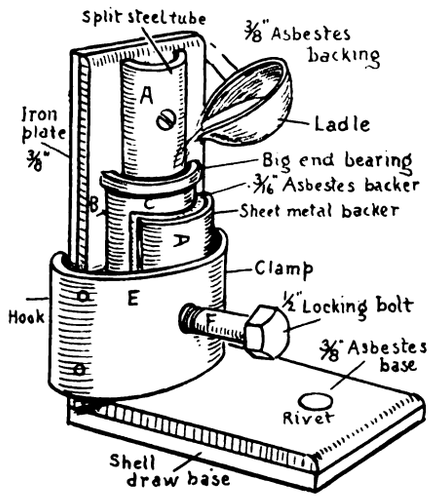
In the accompanying illustration is shown a jig which not only prevents waste of metal, by properly regulating the thickness of the lining, but permits the production of close, sound work and, moreover, can be used for babbiting bearings of any of the ordinary sizes.

Design of a Babbiting Jig.

The foundation of this babbiting jig is a piece of flat iron ⅜ inch thick, 3½ or 4 inches wide and 12 inches long, bent at right angles in the middle so that each leg will be 6 inches long. The inside faces of the bed-plate thus made are lined with asbestos millboard ⅛ inch thick, riveted on, both pieces extending close into the corner. To form half-mandrels to limit the inside diameters of the linings a set of forms is made up of heavy drawn steel tubing in lengths of about 5½ inches and of diameters varying by quarter inches from ¾ inch to 2 inches, outside diameter. These tubes are split lengthwise and one-half of each is used. Each tube is drilled and countersunk for a ¼ inch machine screw and the bed-plate is drilled and tapped. A split tube is shown at A, the position of the screw being also clearly shown. A half-bearing in position for babbiting is shown at B; it is held in place by a ½ inch locking screw through a tapped hole in a bent plate E, with in-turned lips which extend about half an inch on each side over the back of the bed-plate. The end of the locking screw bears on a piece of curved iron, D, about ⅛ inch thick, and between the iron and the half-bushing there is a piece of asbestos ⅛ inch thick, and between the iron and the half-bushing there is a piece of asbestos ⅛ inch thick. The clamp E is made of ⅜ inch iron 2 inches wide and 8 or 9 inches long before bending.

Modus Operandi of the Device.

In setting up a half-bushing for babbiting the first thing to do is to select a split tube of the proper size, so that the lining, when poured, will be just thick enough to permit finishing with the least amount of waste. For instance, if the journal which runs in the bearing is 1⅞ inches in diameter the tube may be 1⅝ inches outside diameter, which will leave ⅛ inch to be removed all round. However, if the jig is carefully set up and the operator is familiar with the handling of babbitt, a larger split tube may be used, leaving, say, 1-16 inch to be taken off. The half-mandrel is screwed to the bed-plate and the half-bearing put in



SIMPLE BABBITING JIG

place as shown, its lower end resting on the asbestos lining of the lower leg of the bed-plate. Two or three strips of wood or metal, or wires of the proper diameter, may be used as temporary distance-pieces to keep the space between the bearing and the mandrel uniform while the clamp E is put on and the locking screw tightened against the iron and asbestos backing. The distance pieces, of course, must be removed before the metal is poured.

Heating That Ensures Clean Casts.

As it is impossible to obtain good results by pouring babbitt into cold moulds, the whole jig, when set up and the clamping screw tightened down, should be heated up with a blow-torch so that the metal will not be chilled, but will flow readily into all the space to be filled. A great deal of the success of babbiting bearings depends upon the proper heating of the soft metal, and as the most favorable temperatures for pouring differ in different brands of metal, the instructions of the metal makers should be carefully followed in this matter. Overheated babbit is liable to lose much of its good qualities through the evaporation of part of the alloy, while if the heat is insufficient the casting will be unsound and all the space will not be filled.

The only part of the jig that is likely to wear or give out is the asbestos, and it is a simple matter to renew this when it shows signs of overwork. The asbestos on the vertical leg of the jig should be smooth and firm so as to produce straight, square edges on the lining.

The jig, of course, can be made to handle bushings of any range of sizes by properly proportioning the various parts and providing a set of split tubes of suitable diameters. The dimensions here given, however, are suitable for the general run of automobile work, and if anything much larger or smaller is to be handled it will be found best to have two jigs to cover the range.

Telescope Joints for Copper Tubes.

In the absence of couplings or other means of making a joint, a copper tube can be very satisfactorily joined by telescoping. The end of one tube should be enlarged with a tapered tool, for which purpose the smooth shank of a center punch often can be used. Then taper the end of the other tube on the outside until the two will telescope. The end that is expanded must be well annealed to prevent cracking, and may require annealing twice or even more, if the tubing is thick. Work the two tubes into each other until a fairly good joint is obtained; then carefully tin the contacting surfaces and sweat them together by heating till the solder melts, holding them in position until it cools.

To Preserve Setting of Calipers.

The "setting" of a pair of calipers, either inside or outside, can be preserved, even if the calipers have to be shifted, by carefully marking two points, one on each leg, and setting a pair of good, sharp dividers to these marks. For instance, if a pair of inside calipers is used to measure an opening that has a restricted mouth, so that the legs have to be closed to get the calipers out, this method will make it possible to reset the calipers and get the scale measurement.

Tire Pump for Blowpipe Purposes.

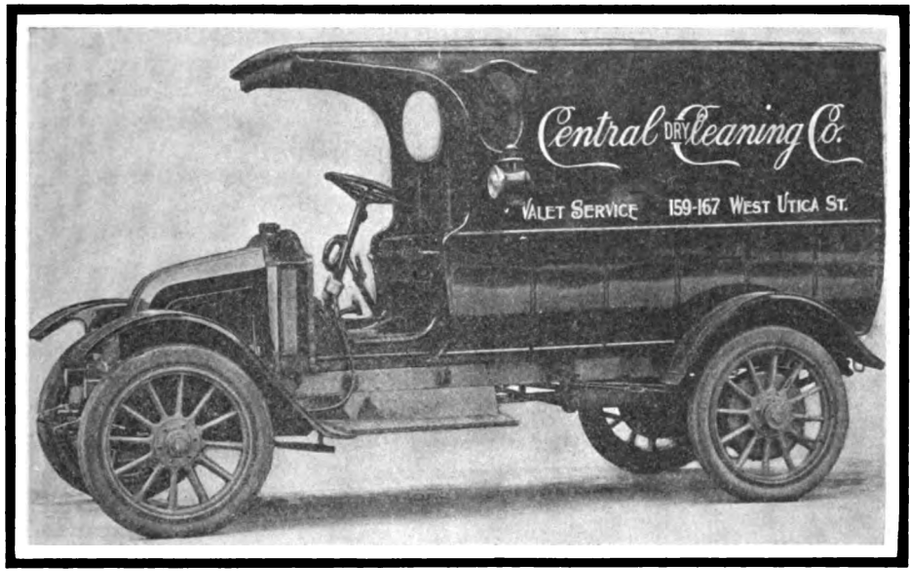
The foot bellows generally used with small gas blowpipes is rather expensive, and a satisfactory substitute can be made by connecting an ordinary foot tire pump with the inner tube—or part of the tube—of a bicycle tire An envelope of cotton cloth large enough to give the rubber an expansion of about an inch in diameter will prevent its bursting or swelling unduly, and the pump can be rigged for pedal operation without much difficulty.

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INCREASED MOTOR POWER IN LIPPARD-STEWART TRUCK

Also Bigger Pneumatic Tires and New Clutch and Gearset—Distinguishing Features Improved and Retained.

Still concentrating its energies on the production of a single chassis model of 1,500 pounds carrying capacity, upon which various types of bodies are mounted, the Lippard-Stewart Motor Car Co., of Buffalo, N. Y., in its "revised edition" has adhered to the distinctive features of construction that have characterized these cars in the past—the Renault type of hood with the radiator behind it, left steer and center control, pneumatic tires, coil springs to take the weight when the rear semi-elliptics are well compressed under load, and so on. A few changes have been made, however, with a view to improving the car as a whole, enabling it to do its work more easily, more quickly and more economically.



LIPPARD-STEWART 1,500-POUND DELIVERY WAGON WITH CLOSED BODY

Chief among the changes made is the substitution of a Continental motor of 30 horsepower, with cylinders of 3¾ inches bore and 5¼ inches stroke, for the 22 horsepower motor previously employed. Other improvements include the substitution of a leather-faced, spring-backed cone clutch for the multiple disk and the separating of the clutch unit from the transmission, with which it formerly was combined; the adoption of a Brown-Lipe gearset with gears of 1 inch face and shafts mounted on roller bearings; the lengthening of the rear semi-elliptic springs by 5 inches, which makes them 51 inches long; the substitution of semi-elliptic front springs 40 inches long for full elliptics; the strengthening and lengthening of the frame throughout; the use of a heavier steering gear, designed as suitable for 1-ton loads; the increasing of the pneumatic tires from 34 x 4 inches to 35 x 4½ inches, front and rear; and the enlargement of the gasolene tank, which now holds 14 gallons as against the 10 gallons of the old tank. The present motor is cooled by forced circulation; the thermo-syphon system was employed in the former engine.

The new motor is of the L-head type with block-cast cylinders, and is so located as to be extremely easy of access. Not only is there no radiator in front of the engine to be dodged, but the hood swings upward and backward and all the motor parts that are likely to require attention are readily gotten at from the front, between the frame ends. The removal of the cover of the timing gear casing is rendered easy by reason of the fact that the cross-member of the frame, carrying the starting crank, is removable by the withdrawal of four bolts, leaving the front end of the engine exposed completely. The engine support consists of four heavily webbed arms cast integral with the crank-case and extending to the main frames of the car.

The engine is protected from the inroads of dirt and water from underneath by a heavy sheet steel pan which, however, is very readily removed, should this be necessary, by the unfastening of special clamps, when the whole pan may be pulled forward and out.

Ignition is by a single system which derives its current from an Eiseman high-tension magneto. In order to guard against the trouble that not infrequently arises from the bungling way in which many drivers handle the spark advance lever, the time of ignition on the Lippard-Stewart car is fixed at the point which experiment and practice has demonstrated to give the best all-round results.

The cone clutch which replaces the old multiple disc clutch is of pressed steel, 15¾ inches in diameter with a face width of 2⅝ inches. The shifter fork, which is carried in a cross-shaft journaled on the main frames, has its ends fitted with hardened steel rollers. Grease cups are provided for the lubrication of the clutch shaft bearings. As already has been mentioned, the clutch is now a separate unit from the gearset, to which it drives through a shaft with universal joints. The gears give three speeds forward, with selective control, and are of chrome-nickel steel, heat treated. The shafts are of large diameter and run in Timken roller bearings. A special latch is placed in the reverse lever to make it impossible for the driver to shift into reverse while the car is in forward motion.

Final drive is by propeller shaft and bevel gears, the shaft, which is of nickel steel, being fitted with dust-proof and oil-tight Spicer universal joints, one at each end. The rear axle is a Timken, full-floating, roller bearing, with pressed steel housing; the roller bearings are of the adjustable type. Not only can the differential be inspected through an opening, with a cover, provided for the purpose in the rear of the housing, but it can be removed through the same orifice. Both internal expanding and external contracting brakes are carried on the rear axle ends; the drums are 17 inches in diameter and 2½ inches wide. For emergency braking the internal brakes are used, while the externals are employed as the service brakes.

Channel steel, heat-treated stock, is the material of which the main framing is built; the cross frames are of heavier section and are attached to the main frames by means of heavy webs. The front member is removable so that the engine can be inspected and, if necessary, removed from the car by sliding it forward on skids placed in front of the chassis. Where the greatest strain comes on the main members of the frame the channels are 5½ inches deep and 3¼ inches wide, tapering towards the ends. The front of the frame is narrowed to give maximum turning radius.

Left hand drive and center control, a feature of former Lippard-Stewart cars, is retained; the gear-shifting lever is mounted directly on the top of the heavy aluminum gearcase. The elimination of the spark control lever leaves only the throttle control on the steering wheel; the usual pedals for the service brake and clutch and lever for the emergency brake are provided.

On the single chassis model, which is fur-

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nished in two wheelbase lengths, 115 inches and 125 inches, are mounted bodies appropriate to the various classes of service for which a machine of 1,500 pounds capacity is adapted — platform stake, open express, screen express, full panel delivery, ambulance, omnibus, and so on. In the matter of painting and finish the Lippard-Stewart cars are given rather more attention than is usual in commercial vehicles, the painting process involving the application of ten coats. All metal trimmings are finished in nickel. Equipment, when commercial bodies are fitted, consists of three oil lamps, horn, tool kit, tire pump and tire repair outfit, while with ambulance, police patrol, omnibus and similar bodies acetylene tanks, headlights and other extra equipment, such as usually is supplied with such vehicles, is provided.

Russia to Test Motor Sleighs.

By way of discovering the suitability of self-propelled vehicles for transporting men and materials over the snowy wastes of Russia, what is styled an "international trial of motor sledges" is to be held under the auspices of the Imperial Russian Automobile Club on January 19th. The trial will take place close by St. Petersburg and will be held over a 3.3-mile course. In addition, the vehicles will be required to traverse two miles of untrodden snow under conditions such as would absolutely preclude the possibility of other motor or ordinary vehicles negotiating the passage. Afterwards, there will be a speed trial for those competitors who have passed the first part of the extremely strenuous tests to the satisfaction of the judges.

Columbus Y. M. C. A. Has Garage School.

The Young Men's Christian Association of Columbus, O., which has been conducting an automobile school for two years, has established a garage school, 31 x 65 feet, on East Chapel street; it is a two-story structure, contains a freight elevator and is otherwise well equipped for practical garage work. Robert F. Nadig, who has been the association's automobile instructor since the school was opened, will be in charge of this branch.

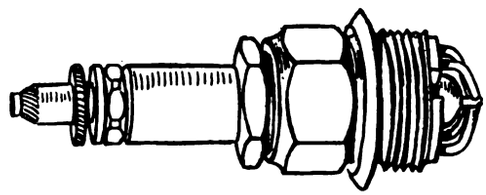
Goodyear Breaks One-Day Tire Record.

Five thousand two hundred finished tires were turned out by the Goodyear Tire & Rubber Co. of Akron, O., one day last week, and as the number constituted a high record for a single day's work it was decided the occasion was a fitting one for a "blow-out." The "blow-out" took the form of turning loose all the factory whistles and keeping them going until all Akron was agog and asking what the terrific clamor meant.

SPARK PLUG FROM THE WEST MARKS RADICAL DEPARTURE

Gas-Pocket Principle Disregarded and Firing End Made a Hemisphere of Lava—Insulation of Two Parts and Substances.

Ever since the manufacture of spark plugs assumed the dignity of an existence separate from the building of motors, all sorts of ideas have been brought to bear for the utilization of a more or less capacious chamber back of the sparking points, and much stress has been laid upon the efficacy of the outburst of burning gas from this chamber in igniting the main charge in the cylinder, and, through the alternate in-and-out currents, in keeping the lower end of the insulating core and the sparking points clear of deposits of oil and carbon.



RADICAL V-RAY PLUG

Judging by the number of such plugs in successful use, the gas-pocket plug has at least "made good." A new plug that just has been brought out by the Marshalltown Motor Material Mfg. Co., of Marshalltown, Iowa, however, has been designed with total disregard for tradition in this respect, for there is not a vestige of a chamber back of the points. On the contrary, the new V-Ray plug, which is the latest addition to a line of spark producers of that name, is provided with insulation which protrudes beow the steel shell in the form of a little hemisphere of lava, from the center of which projects the central electrode. Four equidistant points springing from the shell converge toward the central electrode, as the accompanying illustration clearly shows.

Not only is the plug peculiar in the lack of space behind the points, but the insulation is of unusual construction, being made in two parts and of two different substances. The lower part, which is exposed to the heat of the burning gases, is of hard lava, said to be indestructible, to all intents and purposes, and quite unaffected by heat. The upper part of the insulating core, which projects above the shell, is of mica and is formed of six layers of mica wrapped around the electrode and a complete covering of mica washers, compressed under great pressure. V-Ray plugs are made in all standard size threads, and, owing to the shortness of the firing end, require very little clearance in the cylinder or valve chamber.

Dealers Supply Keys for "Free Air."

"Free air" at garages and supply stores is in no wise a novelty and is properly rated as a valuable trade getter. Bumiller & Remlin, dealers at 412 Main street, Cincinnati, O., however, have improved on the ordinary air service and have inaugurated a "help yourself" system through which air is obtainable by the user of pneumatic tires, even should the place of business be locked up. The supply is made available through keys which are being distributed to owners of cars, motorcycles and bicycles; these keys control the outlet valve of an air reservoir, the air pipe extending to the curb. The pressure is obtained from an electric pump which automatically maintains a certain pressure in the tank.

Effect of Bodies on Increased Speed.

Taking some of the wind out of the sails of those who point with pride to the development and betterment which have permitted phenomenal speed to be obtained from comparatively small engines, a British tradesman whose name almost is a household word across the pond, is at pains to point out that not all of the increased speed can be traced to increased engine efficiency. Quite as much is due, he says, to the fact that greater attention now is paid to the factor of wind resistance, and that practically all of the cars that have shattered records during the present year have been fitted with bodies in which the "streamline" theory is their most conspicuous feature.

New Date for Shock Absorber Test.

The shock absorber competition which was to have been promoted by the Association Automobile de Belgique this month and at which a number of shock preventing devices, among them the Gabriel Rebound Snubber, was to have been tested, has been postponed to commence on January 6th, this date having been chosen by reason of its proximity to the date of the opening of the Brussels show. Already the manufacturers of eight different devices have entered their products.

Offers Prize for Gasolene Substitute.

Taking a leaf out of a British book, French motorists view the increasing price of "petrol" with alarm and, through the Automobile Club du Rhone, of Marseilles, have decided to offer a prize of 5,000 francs, which is equal to about $1,000, to the inventor who shall produce a fuel to take the place of the ordinary spirit.

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ORIGINALITY IN AUTOMOBILE SALESMANSHIP

Brooklyn Dealer Builds Up Trade in a New Car Through Methods Which Are of His Own Invention—Varied Colored Bodies One Means of Publicity and Even Children Aid Him—Corset Experience That Helped.

Building a retail trade in automobiles is, with the great majority of dealers, more or less alike in the one respect that the dealer who to-day enters the trade generally signs up with a company whose product has been extensively advertised for a number of years and is more or less well known. Therefore the taking on of a car selling above $2,000 and which is new in the market developing a substantial trade, and making the car well known where before it was not known at all, and doing this without spending a small fortune in advertising and through those methods which are said by some to be necessary to a successful promotion may be said to be a worthy achievement.

Different Methods and Different Man.

However difficult it may appear, it has been done by E. J. Montigny of Brooklyn, N. Y., who deals in the comparatively new Stutz car at 1289-91 Bedford avenue. Just as his proposition may have been different, Montigny himself is different, but he is no more different from the majority of other dealers than are the methods he employed in building up his business. He declared that the Stutz is as well known as, if not better than, any other car in Brooklyn. The natural question was "Why?" and the Motor World man who talked with Montigny asked it. Montigny replied he did not know, and could not cite facts as productive of the result.

The Motor World man suggested that the answer was very concrete and was nothing else than Montigny himself. The dealer modestly denied this, but one familiar with his business must feel that another man, even with Montigny's methods, could not have done what this dealer has done.

Wherein Cars and Corsets Are Akin.

Lest some trade rival mention "corsets" at this point and tilt his nose somewhat satirically in the saying, it may be stated that Montigny has found that selling corsets and selling automobiles are not so widely variant as might be supposed. "The principles of selling both are the same," he declared. He used to be advertising manager of a New York corset house, and if there is any trade in which there is more opportunity for the study of human nature and salesmanship than there is in turning out a popular line of whalebone armor Montigny would like to school himself there for a while.

Selling Ideas and Their Results.

He has been Stutz dealer for some two years and is one of the successful dealers in Brooklyn, despite the fact that his salesroom is not big enough conveniently to accommodate more than two cars. The first year his sales were small, but in the year which closed August 1 last he sold 38 cars and during the 1913 season expects to dispose of 50; he has orders for one-third this number already.

How Montigny works is exemplified by one sample of his methods—the one that has made the 40 Stutz cars in Brooklyn look like 100. When he first opened his agency he realized that to get an opening for his cars he must get some of them on the streets—the more cars the better. He looked over the cars that passed his door and, as a rule, they looked rather commonplace and very much alike. That gave him an idea—he would have his cars look unusual. As the first orders were received he suggested to his customers that they take different colored bodies, as this, he explained, would make the car stand out from the multitude. The result is that most of the Stutz cars in Brooklyn are vermilion, green, yellow, dark blue, royal blue and gray, with a few black ones interspersed.

Magnifying the Number of Stutz Cars.

What is the result? A man sees a flaming red car on Fulton street or Bedford avenue and notices it because of its color; he recognizes it as a Stutz. Perhaps an hour later he sees the same car a mile away, and it again attracts his attention. Nine times out of ten he thinks he has seen two red Stutz cars. There are fifteen of these vermilion painted vehicles and, said Montigny, "They look like forty-five." This fleet of brightly colored cars makes the Stutz in Brooklyn stand out like one of those bright red United Cigar Store fronts in a row of last-generation haberdasheries.

Even the children of the neighborhood are Stutz boosters. Montigny is a genial individual and takes an interest in the youngsters and many of them like to talk with the dealer about the rakish little "pushmobiles" in which the boys speed around the streets. The children, and nearly everyone else in Brooklyn, know that the Stutz racer, No. 2, did good work at Brighton Beach this fall, so when they talk racing with Montigny he tells about the famous "Stutz 2" and recommends it as a name for the juveniles' racers. The result is that a multitude of these future motor car owners are raising the dust in Brooklyn with their little cars, each of which bears upon its bonnet the childlike scrawl. "Stutz 2." If "daddy" asks why this name was chosen the young De Palmas are quick to answer, "Huh! Fastest car in the world."

Automobile Trade as Seen by Outsiders.

Montigny as a dealer is doubly interesting because he illustrates the view of the automobile selling trade taken by the sound business men of other trades. He says there is a false glamor over the automobile trade that cannot be dispelled any too quickly for the trade's good.

"Everyone seems to have an idea," he said, "that the automobile trade is a gold mine, that all a man has to do is to get an agency, open a salesroom, sit down and the dollars will begin to pour in. That is wrong from the start. There has got to be some sound business sense injected into this business before it is placed on the proper basis.

"Too many young dealers are eager to sign up for any old line, and that accounts for the cocky attitude of the manufacturers. If I should quit this business to-morrow there would be a line of men waiting to take it up and sink their money here, whether they knew anything about the business or not."

Deplores Inefficiency of Salesmen.

Montigny's experiences with automobile salesmen are the theme of another line of discourse in which he classifies the majority of them in language such as he alone can control. In the colloquial expression of the day, his opinion of them is briefly expressed in the word "Mutts!" Since he has been in business he has had about 20 salesmen, each of whom lasted about that many days, some more, some less.

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"Most of them," he asserted, "go to a prospect, tell a little tale about the car—which is all they know about a car—hand out a lot of bunk that doesn't amount to anything at all, and expect to make sales. They are as bad as the mechanics. I find the trouble with most mechanics is that they don't 'mechan'; one of them may know all about the southwestern part of the differential of one car, but show him the same section of the differential of another car and he's lost.

Salesmen Who Are "Also Rans."

"I had one salesman who telephoned me one night about 6 o'clock to know if he could have a demonstrator at a certain store at once. He insisted the prospect was ripe and about ready to close. I took the car down, and the salesman, the prospect and myself drove to the man's home. When we got there I sort of butted in and asked the man, without any preliminary discussion, the lowest price he would take for his old car. He said $500. I said, "I'll give it." The salesman, however, did not have gumption enough to take the cue and close the sale, and I have yet to learn why.

"The other evening I called at one of the best residences in Brooklyn. How many salesmen are there, do you suppopse, who could go into a home like that, make a presentable appearance, keep up their end of the conversation and still not let the object of their visit be lost sight of? A lot of them can't lead; they follow. They see a demonstrating car in front of a man's residence, get the number and at once there is a rush of dealers after that prospect. That's no way to do business. I sent a salesman around to a man's house one forenoon and he came back with the statement that the prospect would like a demonstration after lunch. When I drove around there after lunch there were three cars in front of the house. I didn't stay. The prospect already owned a car of the make sold by one dealer who was in the bunch, and he drove away with this man.

Where the Woman Comes in.

"I called on one man and talked with him, but didn't annoy him by running to the house and waging a regular campaign against him. He met me one day and said, 'You didn't come to see me again.' 'No,' I said, 'I don't do business in vestibules or with hired girls. This is my place of business, and if anyone really wants to find me they can get me here.' Those salesmen who go sneaking around a man's back door, talking to the hired girl and nosing for information, make me weary.

"Sub-dealers? I have none. All of Long Island is my territory, but the most of the would-be sub-dealers will not buy a demonstrating car. They hand around catalogues and expect to sell cars with pictures. I won't take a sub-dealer now unless he buys a demonstrating car."

Women are an important factor in the Montigny school of salesmanship.

"At what point does the woman come in?" said he, repeating the query. "All the way through the transaction; as soon as the husband or father decides upon a make of car or begins to look one over, the woman is interested, and it is well to draw her attention to those features which interest her. She is interested in how the car rides, and one point I always emphasize is that the Stutz has no sidesway, for I know that this motion in a car is quite likely to upset a woman's stomach. Many times I have had my introduction of this point followed by the exclamation, "That's fine! Anything that spoils riding for me is that swaying movement in a car!'

Appearances that Deceive.

"Another explanation I always make whenever a woman steps into a car while it is on the salesroom floor is that the woman thinks she is at least 18 inches higher up than she would appear were the car in the street. In the street, the sidewalk is about nine inches above the pavement and the cars, therefore, are lowered that much; but in the salesroom the floor is nine inches above the sidewalk and the sidewalk is nine inches above the street, which makes the woman think the car is hung away up in the air—but this forestalling explanation heads off any objection on that score."

Montigny's methods of demonstrating may be regarded as out of the ordinary in that he picks out the smoothest streets available; rough thoroughfares are rigorously avoided.

The Physician Who Drives.

"If I take a rough street," he explained, "I can explain all I want to that any bumps encountered are due to the street, but there is always a suspicion that the car is a rough rider. A woman does not want such a demonstration. She wants a nice, easy one, and that is the kind I always give. Such riding delights her. Sometimes the man will ask why I don't take a rough street, but the woman—never! Of course, if the man insists, I take the rough street, but I always ask him if he doesn't prefer to ride in comfort. Someone said that a woman can see only as far as the end of her nose; but you mustn't think women are fools, for they decidedly are not. However, with a woman, a car is as good as it is to-day, and if it is to impress her favorably it must make its impression to-day, and not have explained what it will do a week or a month from to-day. Neither are many women interested in the mechanics of a car."

This Broolyn dealer likewise is a believer in service, but declares that physicians who drive their own cars are a veritable thorn in the flesh, so far as service is concerned. Their cars get hard usage, and this naturally necessitates much repairing. Many little disputes contribute in making this part of the service disagreeable.

A Deal for a Demonstrator.

Used cars are handled on a more business-like basis than in any other agency which has offered a solution of the used car problem. It is so simple that the way some dealers throw away profits is pathetic. Montigny does not take a car in trade unless he is quite sure he can sell it at a profit, and there are few cases in which he doesn't. He used to depend upon mechanics for his estimate of values, but when he found, as he says, that "mechanics don't mechan," he educated himself in the values of used cars and now seldom makes a slip. The profits are not large, but they afford a commission on the resale.

Keeping posted on trade doings is another practice in this shop; he used to follow happenings in the corset trade, so why shouldn't he follow the automobile trade? When the Motor World man mentioned various stories that lately have appeared in trade papers, Montigny was well informed and able to discuss them intelligently. He differs from many in his disbelief in the value of associations. Since he has made good on the "go it alone" policy, he naturally believes in it. He also declares it his belief that other used car plans other than the one he employs are impracticable.

He will seldom depart from his plan to make a sale. But he did so in one case; he had a demonstrator for sale, and the prospect wanted to trade in an old car at $850. Montigny offered to sell the demonstrator for $1,700 cash and agreed to turn over $850 for the used car to the owner before April 15 next. He sold the used car, but had to take a smaller car in trade, and this smaller car was sold for part cash and a $200 note. The note was paid for with a check dated five days ahead, but the demonstrator had brought its orice.

Pouring Oil Through Breather Pipe.

In pouring oil into the crankcase of a motor through the breather pipes—a common method—care should be taken to see whether the crankcase is divided by a central partition or is practically a single chamber. If there is no division, all the oil can be poured through either one of the breathers, while if there is a partition an equal quantity will have to be run in through each.

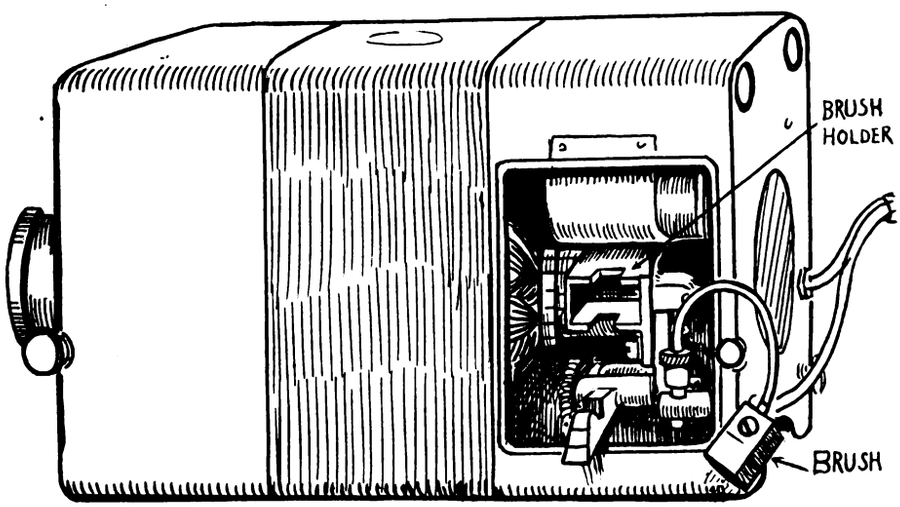
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LIGHTING AND STARTING SYSTEMS MADE PLAIN

How Starting Energy is Applied and the Necessity for Charging the Battery Explained—Remedial Measures for Unnatural Noises—Bijur System an Example of Preventive Practice.

(This is the twelfth of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render easier their care and repair by the dealer and owner alike.)

There is no better way to visualize any of the electric lighting and engine starting systems on the market than to memorize the following essentials: (1) Energy for lighting and starting is obtained from the storage battery; (2) energy for charging the storage battery is obtained from the generator; (3) energy to drive the generator is obtained from the gasolene motor; (4) energy to start the gasolene motor is obtained from the electric motor. Every system, regardless of whether the motor and the generator are combined in a single unit or are separate units, is absolutely the same in these four essentials; there can be no variation whatsoever.



BIJUR GENERATOR, SHOWING BRUSH HOLDERS AND BRUSHES

Why Batteries Must Be Charged.

Consequently, it is quite necessary that the storage battery be maintained in as nearly a fully charged state as is possible, as it virtually is the heart of the system. Needless to add, all such systems will keep the battery properly charged under perfectly normal running conditions without the necessity for worry or bother on the part of the owner. There are conditions, however—they apply more particularly to the dealer—which call for circumspection, as a short digression, drawn from an actual occurrence, will serve to make plain.

A—, who is a dealer in one of the smaller cities, had received from the factory he represented one of the newer series cars which is equipped with an electric lighting and engine starting system. The system is simple in the extreme, as its disposition on a polished chassis showed very plainly. Quite naturally, the dealer was proud of the chassis and of the operation of the electric system and there were few moments in the day, and in the evening, when the motor was not in process of being started, and the powerful head lamps were not boring into the semi-obscurity of the back of the salesroom. For several months the starter and lighter were demonstrated almost literally to thousands with never a miss and never a flicker from the lamps. Then came a man who was in a hurry for a car; who would not, or could not, wait for a new car to come from the factory. A body was placed on the show chassis, and that evening the new owner drove away in a blaze of glory with every light burning and scarcely enough illumination to match his pride in his new possession.

Unhappy Result of Thoughtlessness.

Everything went well until the following day, when, after telephoning one of his neighbors to "ride down town," he hastily swallowed his matutinal cup of coffee and hurried to the garage, where the neighbor already was awaiting him. Both climbed into the forward compartment and, with a smile illuminating his countenance, the new owner depressed the starting pedal with the heel of his boot, and—nothing happened. The familiar, soft-toned growl that signalized the starting of the motor was singularly conspicuous by its absence. The starting gears went into mesh, the needle of the ammeter jogged merrily over to the "discharge" side, and still nothing happened. The motor simply would not start.

Reason for the Starter's Failure.

The reason for the failure to start—the lamps would light, but they threw but a pale beam—was perfectly plain and, couched in the terms of the garage attendant who was watching the proceedings with interest, it was simply a case of "no juice." In demonstrating the starter, the dealer had started the motor probably thousands of times. In order to start the motor for every new spectator, and two or three times for some of them, he had to stop it again almost immediately after it was started. The result was that the battery eventually became exhausted because after each start it was not permitted to run long enough to put back into the battery the energy that was drawn out of it; the motor seldom, if ever, got up to the speed where the charging process commenced. The final drain on the battery, when the new owner drove off with all his lights burning, was just sufficient to deplete the energy left in the battery to the point where it was insufficient to start the motor.

How to Obviate Faint Praise.

Of course, after the new owner had gotten out his once despised crank and started his engine, the charging process began, and it is altogether likely that by the time he reached his office he was very much surprised to discover that his engine starter was in good working order after all.

The moral to the story is plain: The battery must be charged; it is impossible to draw water out of a tank continuously without putting more into the tank. It does no harm to demonstrate any electric lighting and engine starting system from morning till night, and then far into the night. Quite the reverse, if the demonstration is properly conducted, it legitimately may be expected to be beneficial. But—every time the engine is started, it must be permitted to run for a few moments at normal touring speed in order to replenish the battery. Otherwise disappointment is imminent, and at a critical

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moment someone is likely to damn the system with faint praise, or without any praise at all.

How Not to Eliminate Noise.

Another thing—some generators are quieter than others, though it is doubtful if any is silent in the literal definition of the word. However, none of them make an amount of noise that rightly may be termed nerve-racking or even annoying; generally, they emit the soft kind of a purr that indicates a kitten's perfect content with the world at large, bred of a full stomach. Where the noise is perhaps a little more persistent than circumstances would seem to warrant, it is altogether likely that it is due to insufficient lubrication of the driving gears. In the experience of one prominent manufacturer of lighting dynamos, however, too much lubrication may have the same effect. Consequently, it is wise to be governed exactly by the instruction of the manufacturer and not to experiment.

In any case, no one is warranted in taking the liberties that were taken by one dealer who was annoyed by even the very slight noise emanating from a brand new equipment. He eliminated the noise by a simple expedient of reversing the wires leading to the generator, thereby removing the load upon it. Naturally, with no load on it, the generator ran without a sound, which was exactly what the dealer in question wanted. But if that dealer had been wise he would have known that in removing the load from the generator he was removing its work, which is to charge the storage battery, and he would not have had to call in a factory expert to discover the "trouble."

"Hook-ups" that Can't be Changed.

Unfortunately for the dealer, that particular generator would not generate unless the wires were connected to it in the way specified by the manufacturer—nothing very funny about that. Some generators will perform their allotted work regardless of how the wires are "hooked up," but their number is small. In the majority of cases, the positive wire from the battery invariably must be connected to the positive terminal of the generator—a fact which has on more than one occasion been strongly emphasized in the eleven articles which have appeared in the eleven preceding issues of Motor World. In cases where the wires may be connected eitner way, the manufacturer never fails to make that point plain, for it is one of his "talking points." In other cases, the instructions of the manufacturer always must be followed with scrupulous care.

In proportion to those purchasers of cars already equipped with complete electric lighting and engine starting systems, the number who buy and install their own systems is very small. A number of manufacturers absolutely refuse to supply their equipment to individuals, and the instructions of very nearly all of them may be stated in the three words, "let it alone." In many cases, it is the better part of wisdom for the owner to take the makers' instructions literally and to let it severely alone, though in quite as many cases troubles which loom large really are small and can be successfully treated by almost anyone who has knowledge of the system which bears even remotely on the intimate.

Not Expected to "Let it Alone."

Such instructions, however, most specifically do not apply to the dealer, for he is the accredited agent of the maker and, as such, is expected, quite legitimately, to be familiar with the mechanism of the system he sells. He cannot well be expected to "let it alone," though, sad to relate, it might be better for all concerned if he did follow instructions minutely, provided he is not "up" on the system. However, dealers rapidly are coming to realize that in order to render service, which is the backbone of business, they must be equipped to handle complaints as well as to sing praises, and the number which at present is perfectly able to cope with such minor electrical troubles as might crop up is in marked contrast to the few dealers able to give intelligent aid not so very long ago.

In the products of not a few manufacturers of electric lighting and starting equipment, there is plainly evident a careful attempt to discourage anyone, even the dealer, from tampering with the mechanism in any way whatsoever. At the least, it is a tribute to the reliability and dependability of the apparatus that the maker is willing practically to seal it, secure in the knowledge that it will render faithful service for an indefinite time.

Special Tools Required for Dissection.

In the Bijur lighting dynamo, for instance—it is part of the electric lighting and starting system manufactured by the Bijur Motor Lighting Co. of 250 West 54th street, New York City—it is impossible for the dealer or the owner to touch anything other than the brushes; everything else is enclosed in a tight casing which cannot be opened without special tools—and the tools are not supplied with the apparatus. In developing the system, the makers have worked on the hypothesis that the brushes and the commutator are the only parts which are at all likely to give trouble or to require the care that can be given by other than an expert, and so everything else has been "sewed up tight," to use a colloquialism. The brushes and commutator can be gotten at by removing small brass plates on either side, the dynamo with one plate removed being shown by the accompanying illustration.

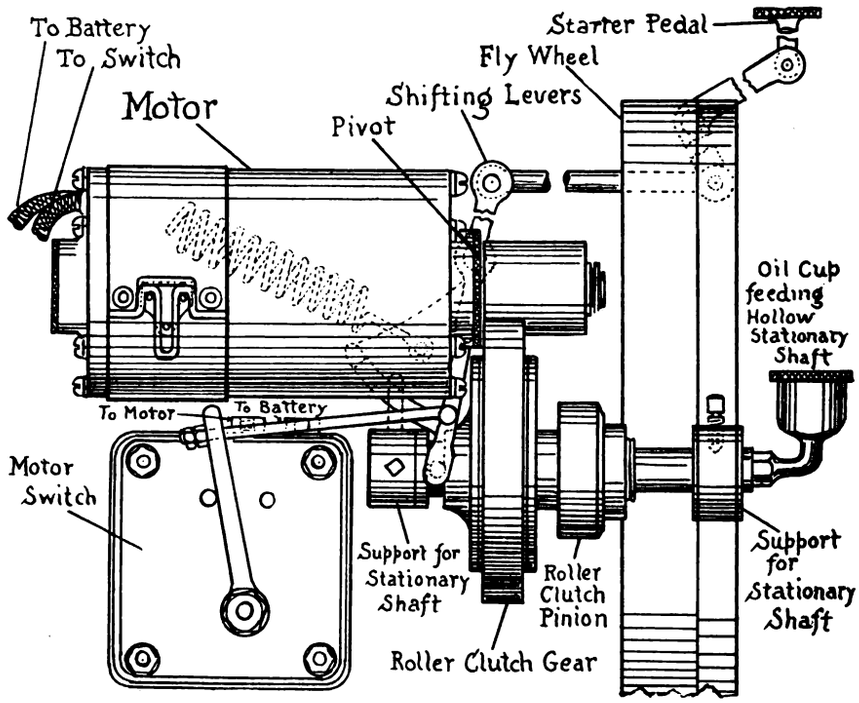


DIAGRAM SHOWING ARRANGEMENT OF BIJUR MOTOR STARTER

The Bijur system is of the type in which the dynamo and starting motor are separate units and is distinctive by reason of the fact that it is feasible to use the dynamo for lighting purposes without the necessity for "floating a battery on the line," as is usual; the battery must be used for starting, as a matter of course.

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In order to permit the dynamo to be used direct for the lighting circuit, it is necessary, of course, that it be positively self-regulating, and this feature is obtained in the Bijur machine by simply varying the strength of the shunt winding by means of a magnetic device which inserts a single step of resistance in the field immediately the output exceeds a certain predetermined limit; when the output drops, the resistance automatically is removed. The mechanism by means of which this action is obtained is enclosed within the dynamo casing, as is the automatic cut-out which also is of the magnetic type. As it is impossible to get at either, much less to adjust or repair them, this fact may be taken as prima facia evidence that such attention is unnecessary. The motor in the Bijur system is no less tight and compact than the generator; it is of the simple series wound type in which the torque increases with the load.

How to Care for the Dynamo.

In caring for the Bijur system, it will only be necessary occasionally to remove the brass plates over the brushes and clean away accumulations of carbon dust or other foreign matter. The brushes may be cleaned with a cloth dampened, but not wet, with gasolene. After a considerable period of service it is well to remove the brushes and both side plates and sandpaper the commutator by inserting a strip of No. 00 sandpaper through the machine so that it bears lightly on the commutator while it is rotating. If the commutator exhibits a brownish, glazed appearance, however, it should not be touched, for it then is in the best of condition. The same kind of care, and no more, should be given the electric motor.

Within the Bijur system there is included a dash ammeter, and with all the lamps burning this should show at least 10 amperes if the dynamo is working properly. If the generator fails to generate after care has been taken to ensure that all the wiring connections are correct, the motor should be speeded up quickly just once. If this expedient fails to bring results apparent in the ammeter the generator should be polarized, as it is expressed in electrical engineer's parlance, though the operation is neither difficult nor laborious.

Testing for Current Explained.

The ignition ground should first be disconnected, after which the gray fiber cap projecting near the outer edge of the front of the dynamo should be removed. Then with the motor running at fair speed and the battery ground open (this is important) a momentary connection should be made between the lower brass post from which the fiber cap has been removed and the brass nut above it, from the center of which the line wire emerges. A silver quarter, or any other small piece of metal, will serve to make the connection, which should be productive of a spark.

After such treatment, the generator should generate, which fact will be made plain by the ammeter. If it does not generate the trouble must be either in the automatic cut-out, which may fail to establish connection between the dynamo and the line as it should, or in the brushes and commutator, which are dirty and therefore prevent good commutation. In order to detect such troubles, a "detector lamp" is an excellent device. It consists of nothing more than an ordinary lamp socket holding a standard size lamp and fitted with two wires approximately two feet long.

If one of the wires is held on the brass screw disclosed by the removal of the fiber cap, and the other is held in the brass nut above it, the lamp should light, thus giving evidence that the generator is generating but that the automatic cut-out is inoperative. As it is impossible to get at the latter device, the only alternative is to return the whole machine to the maker for adjustment. Sometimes, however, it is possible to free the contacts, which may have become stuck together, by striking the casing of the dynamo a few light blows with a rigid instrument. Needless to add, great care must be taken not to fracture the casing.

Troubles that Lurk in Brushes.

If, when the terminals of the detector lamp are placed as previously advised, the lamp fails to light, the generator is not generating, in which case the brushes and commutator should be examined to make sure that the brushes touch the commutator, that there are no short circuits and that the commutator is as clean as it should be. If the ends of the brushes exhibit a highly glazed appearance, they should be sandpapered gently, holding a small piece of fine sandpaper, preferably No. 0000, though No. 00 will serve, over the end of a finger tip. With a little practice the ends may be cleaned without impairing the curvature, which corresponds to the curvature of the commutator. However, it is not absolutely essential that the whole surface of the end of the brush touch the commutator, though a larger surface is better than a smaller one to start.

It should be remembered that the brush holding fingers must work freely on their hinges; if they do not work freely, the brushes may not be held properly against the commutator. If they bind slightly, a tiny drop of oil may be placed on their hinges, care being taken that no oil gets onto the brushes themselves. It is just as important, of course, that the brushes work freely in their holders, and as an accumulation of carbon dust or other foreign matter is about the only thing that can make them stick, they should be cleaned periodically. In replacing the brushes, care must be taken to see that sharp edge is uppermost.

Operation of the Motor Made Plain.

There is nothing in the motor, other than the brushes and commutator, the care of which already has been outlined, or in any other part of the system barring the storage battery, that will require attention. The location of the starting motor may vary according to the design of the engine and the facility with which it may be placed, a typical mounting being shown herewith in plan. In the installation pictured, the motor drives the gasolene engine through the intermediary of double reduction gearing carried on the clutch shaft. Depressing the starter pedal first connects the motor to the battery through a resistance causing the gears to spin and facilitating their engagement. Further depression of the pedal cuts out the resistance in the circuit and permits the full strength of the battery to flow to the motor—the systems are made to operate on either 6 or 12 volts. The drive is through a roller clutch, which effectually prevents damage in the event of a back fire. The starting pedal is spring returned to its normal position immediately the pressure upon it is released.

Soft Soap in Automobile Manufacture.

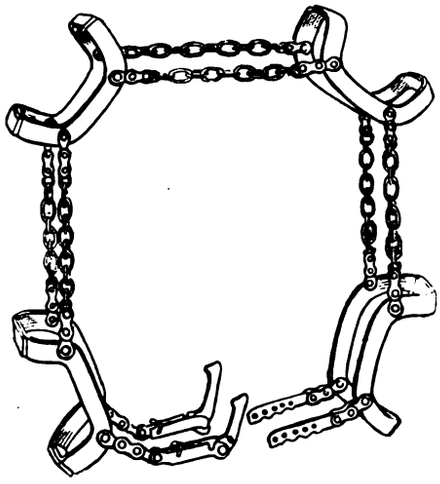
That such a homely commodity as soft soap enters into the process by which an automobile is built may cause a slight lifting of eyebrows among the uninitiated, and yet the Ford Motor Co. of Detroit, Mich., for instance, uses nearly half a million barrels of soft soap a year—and none of it is used for cleansing purposes It is used to lubricate the thousands of drills in the immense Ford shops, though it scarcely would be recognized for soft soap in the condition in which it is employed. Ford chemists have devised a formula for mixing into solution soft soap, which is purchased in 500-pound barrels, hot water and mineralized lard oil, and one man spends his entire time proportioning the mixture. Afterward, it is pumped around the shops through a pipe line to each of the machines and permitted to run continuously over the work and down into a hollow base in each machine, whence it is pumped back over the work continually. When it is "worn out" it is permitted to drain away through the sewer. The mineralized lard oil also is consumed at the rate of approximately 50 gallons a day.

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To Prevent the Truck from Skidding.

A motor truck that cannot move is at least as bad as no truck at all, and a machine with smooth-tired wheels spinning helplessly in mud, snow or on ice or other "anti-friction" road material is without doubt a useless vehicle, so far as delivering the goods is concerned. Among the newest of the devices designed to render the truck immune from such troubles is the Federal grip, the product of the Federal Chain & Mfg. Co., of Springfield, Mass., which acquired and manufactures the Gaylor grip, also.

As the accompanying illustration shows, the Federal device consists of a set of grips, curved to fit the tire and held in position by connecting chains; an adjustable toggle lock form the connecting link for attaching and detaching. No tools are required for putting on or taking off the grips, and when not in use they fold into compact bundles, which are readily stowed



FEDERAL TRUCK TIRE GRIP

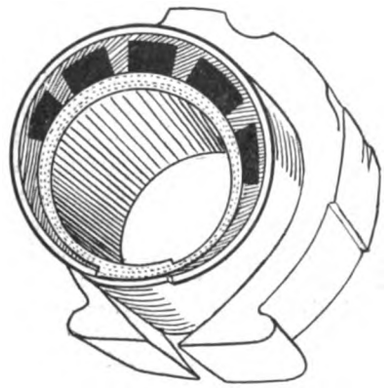
away. Two minutes is said to be the average time required for attachment. The cross-bars are made of high-grade alloy steel, doubled in thickness where the road wear comes, and are practically indestructible. To avoid cutting the tires the under surfaces of the cross-members are smoothly rounded.

Care that Preserves Automobile Tops.

While automobile tops do not require a great deal of care to keep them in good condition, there are a few precautions that should be carefully observed For instance, if a car is not to be used for some time the top will be kept in the best condition if it is left open; otherwise it will become creased, perhaps permanently. Folding a top while it is wet is more than likely to result in the appearance of mildew, which will at least make unsightly and permanent spots, and not improbably will cause leaks and holes. Neither gasolene nor kerosene should be used on tops or curtains; a very weak solution of ammonia and water, applied with a soft brush, is the best thing for pantasote, while mohair requires nothing more, ordinarily, than brushing and dusting to keep it clean.

Inner Tube that has Two Skins.

As long as tires are made of rubber and fillings of air, the search for some means of preventing the perforation of the former and the escape of the latter will go on untiringly--unless the problem is so effectually solved that there no longer is any question in the matter. Meanwhile, the tentative solutions are many and ingenious, and not the least ingenious and one of the



REASON CELLULAR TUBE

most recent is that of the Reason Tire Co., of Pontiac, Mich., which manufactures an inner tube that is double-skinned, with a system of cells between the two skins, like a modern steamship's hull.

The accompanying illustration shows the construction of the Reason cellular inner tube so clearly that detailed description really is unnecessary. The materials used in its construction are the best quality Para rubber, and fabrics made by a patented process, said to render the tube puncture-proof. The compound tube is inserted in the tire in exactly the same manner as an ordinary tube, and it is inflated in the usual way. Not only do the manufactuerrs claim for the device immunity from punctures and blow-outs, greatly increased tire mileage and the ability to stand up in old casings that are too far gone for further use with ordinary tubes, but they state that, while the weight is somewhat greater than that of the usual type, it is at least as resilient as a tire with an orthodox type of tube, of similar dimensions.

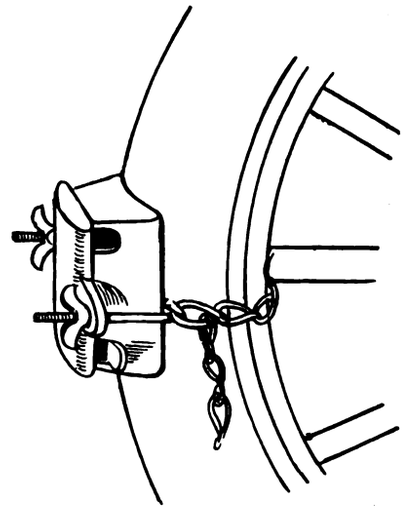
Removing "Overhang" from Cold Chisels.

The head of a much-used cold chisel is apt to spread considerably under vigorous blows of the hammer. The mushroom-like overhang should be ground or filed off, for it is apt to chip off under the hammer or to cut the hand with its sharp points—and, besides, it looks extremely "sloppy"

Simple Portable Vulcanizer.

The severity of the stresses to which automobile tires are subjected renders the ordinary cold-cement method of making repairs decidedly inadequate, so far as obtaining permanent results is concerned, and this fact accounts for the activity that has been displayed in devising vulcanizers which, though of small size, light weight and simple construction, will achieve practical results. In the accompanying illustration is shown an up-to-date instrument of the car type—that is, one designed to be carried in the tool-box; its weight is only about three pounds. The "B'Co" vulcanizer is manufactured by the Brown Co., of Syracuse, N. Y.; the heat for its operation is generated by burning gasolene.

The "B'Co" vulcanizer consists essentially of an iron box with a number of integrally cast spikes or rods rising from the bottom.



B'CO GASOLENE VULCANIZER

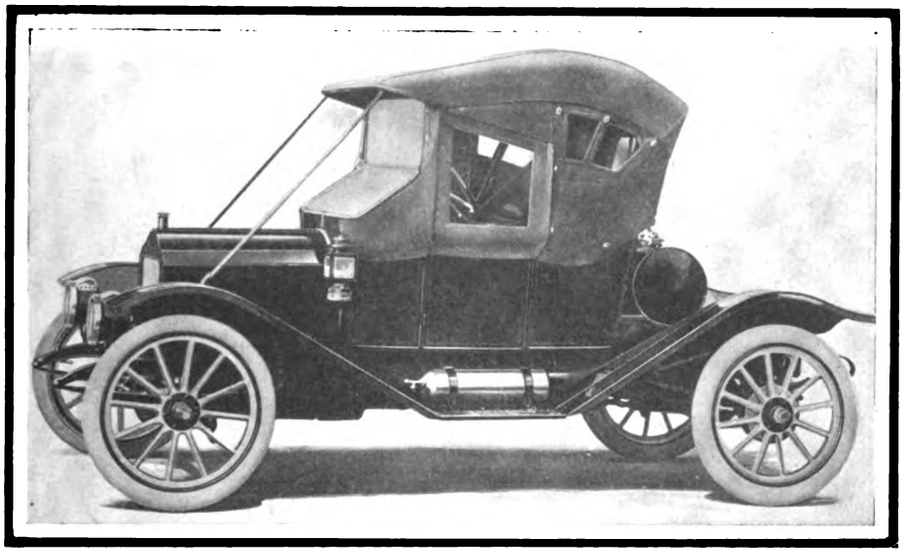
These are to provide sufficient heat-absorbing surface to carry heat to the bottom, through which it passes to the rubber. A cover plate, a pair of clamps and a measuring cup complete the outfit. When a cut on a tread is to be vulcanized the apparatus is attached as shown in the illustration, with the cover plate held on by the clamps which hold the whole in position on the tire. The measuring cup, which fits in a receptacle in the vulcanizer, is half filled with gasolene which is ignited and allowed to burn for 11 minutes—just enough to complete the work. For inner tube work the vulcanizer is used horizontally and the cover plate is placed under the bottom to hold the tube in place against the heated surface. Gasolene is poured directly into the box and ignited; the heat is absorbed by the spikes and carried down. The outfit consists of the vulcanizer, with its cover, cup, clamps, and chain, finished in nickel plate, vulcanizing rubber and scissors, packed in a box and sold for $2.

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STUDEBAKER ENGINEERS DESIGN STORM CURTAINS

Big Corporation's Designers Turn to Weatherproofing Problem—Swinging Door-Sections to Facilitate Entrance and Exit.

An open car with the top up, the side curtains properly buttoned down and the windshield in position, gives a certain amount of protection from the elements, and, at least, is a whole lot better than no protection at all. There are drawbacks to this arrangement, however, which manifest themselves when driving rain or snow finds sundry crevices and cracks and works through, or when, after a stop in cold weather, it is necessary to reach out through an opening with the bare hand and wrestle with an invisible and refractory fastener—and there are other things that anyone who has done much cold weather driving can call to mind without half trying.



STUDEBAKER CURTAINS WHICH OPEN AND CLOSE WITH THE DOORS

An arrangement of curtains that appears to eliminate most of the troubles of the ordinary type is shown in the accompanying illustration of a Studebaker "20" roadster equipped with the protective outfit that has been designed by the Studebaker force for the use of doctors, contractors and others whose business takes them out in all sorts of weather. The principal feature is that the side curtains swing with the doors, to which they are attached by fastenings that are easily removed when the car is to be used without the protection of the curtains. A flap depending from the top clips the top of the windshield and leaves no opening at this point. In fact, the whole covering is tightly closed, with the exception of two openings, in the rear upper corners of the top, left for ventilation.

Kansas Sheriff Moves a Garage.

P. T. Shortall, who formerly conducted a garage in Kansas City, Kan., at 829 Minnesota avenue, under the style West Side Garage, is still proprietor of that garage, but it is not in the same place. Roy Shipp, however, now has a garage at 829 Minnesota avenue and Shortall is on Nugent avenue, all because of a legal fight and a quick-change scene in which the sheriff engineered the change.

Shortall had conducted a garage at the disputed location for two years at a rental of $100 a month and claimed the lease provided that in case the owner of the building, the Huppe estate, decided to raise the rent Shortall was to be given an opportunity to accept the higher rate. Last August, however, Shipp offered a higher figure for the garage premises and was given a lease, and since then has been trying to get Shortall out and himself in. Attorneys advised a peaceable removal, but Shortall stood pat and continued doing business at his old stand. He insisted upon the soundness of the old maxim that possession is nine points of the law, and inasmuch as he did not care to leave the location he declared he would stay unless put out.

The court, however, when called on decided that Shipp was entitled to the premises. As a result, one night last week, when car owners went to the garage to get their cars they found their 23 automobiles lined up at the curb while the sheriff and a gang of negroes were stripping the interior of the building, even to the calendars on the walls. Shortall smilingly admitted himself beaten, hurriedly rented a building on Nugent avenue and inside of an hour or two was open for business in the new place.

REDUCING DETERIORATION BY COMMON SENSE METHODS

Smooth Running That May Disguise Defects—Annual Overhauling Need Not Be Extensive—"Stitches" That May Save "Nine."

There are many cars that will run, and plenty that do run, for two, three, or even more seasons, without what usually is termed a general overhauling. The machines seem to keep going, and the owners take a certain pride in calling attention to the fact that their cars have not been overhauled since such and such a time—nothing done to them but things that cropped up occasionally and called imperatively for attention. There is no doubt that this way of doing things is entirely wrong, unless the car is used so little that there really is no necessity for an annual overhauling—which rarely is the case.

There is no mechanism that will run for an indefinite period without suffering more or less deterioration in some way, and this is particularly true of a machine as complex and as delicately balanced as is an automobile. Oil gums and forms partial obstructions; parts wear, more or less, and even if they do not wear to the point where actual adjustment or replacement may be necessary, it is entirely logical to assume that a worn part is less efficient than one that is a perfect fit; bolts, nuts, screws and other fastenings loosen up, and ordinarily do not attract attention. Oil works into places where it is not wanted, and works out of places where it should be retained; ignition apparatus deteriorates through the running down of the insulation, and the occurrence of slight electrical leaks, to say nothing of mechanical wear of various moving parts. In fact, even if the car continues to operate in a manner that seems satisfactory, it will be found, almost invariably, that after a year's use there are usually many respects in which it has fallen off from its original prime condition. A comparison with a new car of the same type often will throw more light on such matters than anything else.

An annual overhauling does not necessarily mean that the car must be reduced to a collection of separate parts, and each miscroscopically examined, nor is it necessarily a long, tedious job. It means that the car should be carefully inspected in all its working parts, the body being removed to give easy access, and then, if there are indications of a need for delving, the delving can be done. As a matter of fact, such an inspection is valuable largely as a means of bringing to light indications of approaching

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trouble that might not come to light in any other way. Of course, a car that is in a more or less run down condition ought to be taken down and its details thoroughly gone into; but a car that is running fairly well, that has been well cared for and driven in a reasonable manner, ought not to require the expenditure of a great deal of time or labor to make it practically as good as at the beginning of the season, barring, of course, the inevitable general depreciation. Even this depreciation is considerably reduced by intelligent annual inspections and tuning up.

A dealer or repairman who suggests to a car owner that an annual overhauling is the best thing for the car, when, in the opinion of the owner, the car really does not need it, is apt to be looked upon as seeking business with an eye single to the making of profits. There must be many cases, however, where automobile men are in a position to explain that two annual overhauls of a car in fairly good condition are likely to be very much less expensive than bi-annual overhaul of a much run-down machine. Besides the lesser cost of the work and the probable reduction in general deterioration resulting from annual overhauling, there certainly is no small satisfaction in having the car in top-notch shape at least once a year. Of course, no one would think of accusing the majority of motor car repairmen of being in the business merely for the sake of the beneficial effects on their physical welfare; but, on the other hand, the car and its owner stand to gain more than the repairman does by a proper yearly grooming.

Factory Instruction Lasting Two Years.

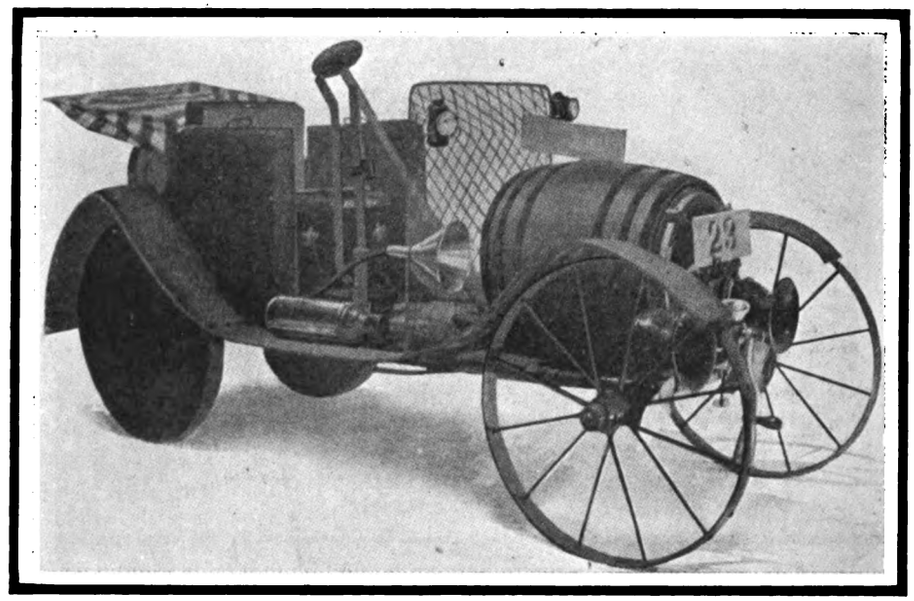
Although automobile schools where pupils are required to pay for the privilege of learning are fairly common, the reverse is the case where not only is free tuition provided under the guidance of qualified expert mechanics but good wages are paid the learners as well. It is true that one or two such schools exist, though none is so pretentious as the school maintained by the Ford Motor Co., of Detroit, Mich., where the "class" consists of 200 and the course covers a period of two years. As each pupil becomes familiar with one machine or one operation in the construction of a car, he is shifted to another, and so on right through the shops, until at the end of the two years' course he is assured of at least the rudiments of the trade.

A copying pencil forms a valuable adjunct to a repair kit. The indelible lead forms a practically inerasible mark, which is particularly useful in designating the location of punctures in inner tubes and in ensuring that the patch is properly centered.

BUILDS A CAR OF HARDWARE STOCK FOR WINDOW DISPLAY

Dealer Exhibits Clever Product of Window Dressing Talent—Exemplifies What Ingenuity Can Accomplish.

Vehicles and other pieces of machinery constructed by assembling various articles vended by a merchant and the finished product set up as an attraction in a show window are not uncommon, but one which has been evolved by W. W. Merriwether & Son, hardware dealers in Paragould, Ark., is so distinctive and cleverly constructed as to fairly compel notice, as the accompanying illustration suggests. The completed product is an automobile, or it at least has the outlines of such a vehicle, and is called the "Buttermilk Special." It is made of some 19 or 20 articles and outside of the fact that it will not run and is what might be termed an extreme in standardization is quite a car.



WINDOW DISPLAY FEATURE CONSTRUCTED BY INGENIOUS DEALER

The hardware used in its make-up is as follows:

Front wheels, stag sulky plow; rear wheels, 500 feet length garden hose; frame, Keen Kutter garden hoes; power house, barrel churn; headlight, two brass cuspidors; crank, Keen Cutter food chopper; dash and windshield, fireplace screen; side light, two Baldwin's miner's lamps; Prest-O-Lite tank, Icy-Hot bottle; horn, two-quart tin funnels; steering wheel, wood churn dash; control levers, steel buggy jack; seat, two burner clipper gasolene stove (the chauffeur was arrested for scorching); seat body, three drip pans; fuel tank, four-gallon tin churn; top, Wm. Enders grass catcher for lawn mower; fenders, 6-inch giant stitched rubber belt; number, Arkansas license tag, No. 23; ignition, door bell button.

Starter Designed for Ford Cars.

No very great amount of physical exertion is required to start the motor of a small car, and for this reason starters of the muscle-exempting sorts on little cars have not been greatly in evidence. Even a small motor can "kick back," however, and there are many occasions when, owing to mud or dust, for instance, it is decidedly unpleasant to stand in front of a machine to crank it, and it is just this consideration that prompted the Bremer-Wilson Mfg. Co., of 1256 Michigan Boulevard, Chicago, to bring out its "Triplex" engine starter for Ford cars.

Briefly, the starter, which is of the mechanical type, consists of a clutch device located on the motor shaft between the fan and the forward end of the crankcase, connected by means of a chain, turning over a pulley-guide, and a rod, to a handle on the dashboard. A pull on the handle rotates the crankshaft and a spring returns the clutch and the handle to their original positions when the handle is released. The clutch is so constructed that, in case of a back-kick, it will let go; in any case, however, a kick could do no harm to the operator, because the handle is not of the crank variety, but is simply pulled straight back and returned to the starting point. The regular starting crank is not displaced or in any way interfered with. The starter can be attached in about an hour's time and involves no complex or difficult mechanical work. The price complete is $11.50

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LOS ANGELES INSURGENTS THROW HATS "INTO RING"

Launch Auto Contest Association of America and "Serve Notice" on A. A. A.—All Sins To Be Abolished.

Apparently there are in Southern California a number of men interested in the promotion of motor car contests, who believe that the laws governing the sport in other parts of the country should not be applied to Southern California or Southern Californians. This spirit, which was very much in evidence last July, when several of those who had to do with the running of the Santa Monica road race on May 4th last were disciplined by the contest board of the A. A. A. for irregularities which cropped up in connection with the contest, is again running high as a result of the automatic suspension of "Teddy" Tetzlaff, who, like others before him, partook of the "forbidden fruit" by participating in an unsanctioned meet at San Fernando on Thanksgiving Day.

Although many other men have similarly disqualified themselves, the California insurgents consider it another "outrage."

Frank A. Garbutt, of Los Angeles, is the man who appears to have been most seriously acected by the turn of events. His feeling stirred him so deeply that, in response to a call which he issued, 24 residents of Los Angeles met in the Los Angeles Automobile Club rooms on Saturday afternoon last, 7th inst., at which time they fairly ripped the A. A. A. up the back and down the front. It was accused of all manner of intrigue and double-crossing, and one man, almost consumed by his own flaming indignation, practically charged that the A. A. A. was guilty of murder, apparnetly because Bruce-Brown met his death while preparing for the Vanderbilt and Grand Prize road races on the Milwaukee course.

The upshot of the meeting was a decision to organize the Automobile Contest Association of America, with Garbutt as temporary chairman and Earl Booth as temporary secretary. The chairman was authorized to appoint a committee of 10 to formulate rules and regulations, which apparently will eliminate intrigue, double-crossing, murder, arson, highway robbery and all other crimes.

A long telegram was sent to the American Automobile Association advising it of the result of the meeting, and, oddly enough, expressing the wish to "co-operate with the A. A. A. to the fullest extent possible that our mutual interests will permit in order that there may be no unnecessary conflict of authority."

Despite the imposing title, Automobile Contest Association of America, Garbutt, who signed the telegram, assured the A. A. A. that "we propose, if the matter is agreeable to you, to confine our field to the West, feeling that unless future developments rendered it imperative that it would not be politic nor conservative for us to invade a field so far from the seat of our organization."

Garbutt also ingeniously added: "If there should develop an occasional individual of this section who is not with us heart and soul it will be because he is not acquainted with the situation as we see it, or because he has some petty ax of his own to grind."

Massachusetts Registrations Gain 29%.

Automobiles to the number of 50,049 were registered in the State of Massachusetts during the fiscal year terminating December 1 last, which, as compared with the 38,633 registered in the fiscal year of 1911, is an increase of 11,416, or 29 per cent. Of this number 1,092 were manufacturers' or dealers' registrations and the non-resident certificates number 858. Approximately 5,000 were re-registrations of cars which changed hands, but this figure is slightly offset by the number of cars covered by the manufacturers' licenses, so that the gross figure is approximately correct. The 1912 registration of commercial vehicles was 4,036, as compared with 2,189 for 1911.

The fees paid amounted to $614,665 and the fines to $29,108, the total increase being $139,580, or about 26 per cent. About 40 per cent. of the cars registered were in the 20-30 horsepower division, but 25 per cent. were in the above-30 class.

Chicago Regulars Down Progressives.

Once more "Bull Mooseism" has had a setback. The more recent occasion was at the annual election of officers of the Chicago Motor Club, on Tuesday evening, December 3rd, when N. H. Van Sicklen, candidate for president on the regular ticket, was elected by a majority of 90 votes over F. E. Edwards, the "Progressive" candidate; the total tally was: Van Sicklen, 295 votes; Edwards, 205 votes. Henry Bosch, regular nominee for first vice-president, also was elected. T. J. Hay and W. E. Stalnacker, who were candidates for the respective offices of second vice-president and secretary on both tickets, were, of course, unanimously elected, and A. M. Cobb, "Progressive" nominee for treasurer, nosed out his "regular" opponent, H T. Hollingshead, by five votes. The new board of directors comprises: L. A. Watts, W. J. Zucker, W. D. Foreman, E. G. Westlake, and Dan Boone.

EMPLOYER, DRIVING, LIABLE FOR INJURY TO CHAUFFEUR

High Court Sustains Verdict Awarded to Widow of Employe—Defense Set Up by Employer Which Availed Nothing.

When the owner of an automobile takes the wheel of a car and drives and his chauffeur sits at his side, he is liable for the injuries to the employe in case accident occurs, is the substance of a ruling rendered last week by the Appellate Division of the Supreme Court in New York City in the case of Katherine Daly against Arthur Weisbecker, a prominent New York business man; the higher court upheld a verdict of $10,000 and costs which had been awarded to Mrs. Daly, whose husband met death while in a car driven by Weisbecker.

According to the complaint in the case, Walter A. Daly and Weisbecker, his employer, were driving on Broadway at 232d street at 5 o'clock on the morning of July 14, 1911, and the allegation is made that Weisbecker had been up all night and had been drinking and was driving recklessly; at 232d street the car collided with a steel "L" pillar and Daly was almost instantly killed.

As to his death and the fact that he was employed by Weisbecker there was little dispute, the difference being as to whether he was in the car at the direction of his employer or had asked to be allowed to ride; the defense claimed he had asked permission to ride and therefore assumed all risk. The plaintiff stated that Weisbecker had directed Daly to sit at his employer's side while the latter drove the car. Mrs. Daly, as administratrix, asked $25,000 for herself and two children, but the Supreme Court for New York county awarded two-fifths of this amount and Weisbecker then appealed.

Ralph De Palma to Re-enter the Ring.

Ralph De Palma has decided to risk his neck again. He almost lost it at Milwaukee, as every one knows, though it has not feazed him even a little bit. Also, he almost won the last 500-mile International Sweepstakes race on the Indianapolis Speedway. Everybody knows that, too. And now he figures that with the old No. 4 Mercedes "fixed up" to make it eligible for the next 500-mile race under the reduced piston displacement restrictions, he has a pretty good chance to win. Anyway, the car has been sent back to its makers for "adjustment" and De Palma is going to follow it soon after the first of the year and once more join the chase for gold and glory.

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1,019,886. Ignition Timer and Detector. Thomas C. Forbes, Los Angeles, Cal., assignor to Los Angeles Rotary Gas Engine Company, Los Angeles, Cal., a Corporation of California. Filed June 9, 1910. Serial No. 566,110. Means for determining the firing cylinder and forming spark in same applicable to rotary cylinder motors.

1,019,896. Vehicle Wheel. Hayes W. Henry, Melvern, Kan. Filed Aug. 31, 1910. Serial No. 579,797. Helical springs incorporated in the spokes.

1,019,916. Process for Making Radiators. Joseph Porzel, Buffalo, N. Y. Filed July 8, 1910. Serial No. 571,002. Radiator shell formed by electroplating a fusible mold which is removed from the finished shell by the application of heat.

1,019,961. Headlight for Automobiles. Joseph M. Hixon, Attica, Ind. Filed May 1, 1911. Serial No. 624,278. Steering gear connection makes lights dirigible.

1,019,973. Automobile Tire. John F. Lieb, Philadelphia, Pa. Filed Feb. 6, 1911. Serial No. 606,966. Adjustable helical spring bearing on shoe in casing.

1,019,976. Dirigible Headlight. James L. Lowe, Moore, Mont. Filed Nov. 29, 1910. Serial No. 594,626. Link from axle stub end to lever on spring, other end of which operates lamp.

1,020,006. Spark Plug. George Wright, Auburn, N. Y., assignor to Harriet J. Wright, Auburn, N. Y. Filed Oct. 1, 1910. Serial No. 584,873. Chamber between shell and bushing.

1,020,007. Lubricating System for Internal Combustion and Other Engines. William J. Wright, Franklin, Pa. Filed June 7, 1910. Serial No. 565,518. Oil sprayed into crankcase.

1,020,043. Supplementary Spring Attachment and Shock Absorber for Automobiles. John A. Mauck, Princeton, Ind. Filed Aug. 9, 1911. Serial No. 643,165. Helical spring attaching to end of leaf spring and to car frame.

1,020,054. Means for Lubricating the Transmission Gear of Motor Vehicles. Louis Renault, Billancourt, France. Filed Apr. 9, 1910. Serial No. 554,548. Flexible tube connecting gearset and universal joint cases, and means for inducing flow of oil through propeller shaft housing.

1,020,059. Carburetter. Walter F. Schulz, New York, N. Y. Filed Nov. 11, 1910. Serial No. 591,751. Means for admitting air to fuel chamber.

1,020,080. Control Mechanism for Electric Vehicles. Clyde E. Cochran, Cleveland, O., assignor to Anderson Electric Car Company, Detroit, Mich., a Corporation of Michigan. Filed July 28, 1911. Serial No. 640,993. Means for operating the rheostat and reverse switch.

1,020,081. Gas Engine. Harry G. Dahl, Tarrytown, N. Y., assignor to Maxwell-Briscoe Motor Company, Tarrytown, N. Y., a Corporation of New York. Filed Aug. 22, 1911. Serial No. 645,385. Frame for carrying push rod sleeves.

1,020,106. Automobile Starter. Hiram Percy Maxim, Hartford, Conn. Filed Oct. 15, 1910. Serial No. 587,166. Pneumatic starter using burned gases from the motor.

1,020,126. Locking Device for Detachably Securing a Rim to the Felly of a Wheel. Henry N. Carragher, Fall River, Mass. Filed Mar. 20, 1911. Serial No. 615,723. Right angle feathers hold rim in position.

1,020,128. Internal Combustion Engine. David H. Coles, Brooklyn, N. Y., and Frederick Charavay, Jersey City, N. J., assignors, by mesne assignments, to Requa Motor Company, a Corporation of New York. Filed May 13, 1910. Serial No. 561,035. Two cycle motor with rotary distributer valves.

1,020,140. Removable Rim for Vehicle Wheels. Carroll D. Galvin, Merchanville N. J., assignor of one-sixth to Amandus F. Jorss, one-sixth to Charles Jacobsen, and one-sixth to Eugene S. Cochran, Washington, D. C Filed Dec. 6, 1911. Serial No. 664,139. Inflatable tube placed between wheel rim and felloe.

1,020,163. Exhaust Muffler. George F. Swain, Chicago, Ill. Filed Apr. 6, 1910. Serial No. 553,689. Baffle plates with alternate central and eccentric holes.

1,020,209. Spring Vehicle. Richard Liebau, Watervliet, N. Y. Filed July 27, 1910. Serial No. 574,159. Pneumatic suspension.

1,020,260. Spring Wheel. Elisha W. Burner, Luray, Va. Filed May 22, 1911. Serial No. 628,677. Pneumatic wheel comprising a number of intercommunicating cylinders provided with pistons which support the weight.

1,020,270. Carburetter. Royal J. Dunn, Port Huron, Mich. Filed Jan. 9, 1911. Serial No. 601,625. Rotation of air inlet valve causes fuel valve to open according to the speed of the motor.

1,020,288. Tire Tool. Patrick E. Kenney, Celina, Ohio. Filed Feb. 4, 1911. Serial No. 606,662. Pliers for facilitating placing of tire retaining rings.

1,020,328. Spring Wheel. A. J. Swartz, Kent, Wash. Filed June 21, 1911. Serial No. 634,496. Helical springs in tension between felloe and wheel rim.

1,020,336. Windshield. Herbert H. White, Brookline, Mass., assignor to Auto Wind Shield Company, Cambridge, Mass., a Corportaion of Massachusetts. Filed Jan. 3, 1910. Serial No. 536,128. Flexible wind shield.

1,020,338. Vehicle Wheel. Otto G. Worsley, Bangor, Mich. Filed May 25, 1911. Serial No. 629,455. Helical springs in compression incorporated in the spokes, and sections of hollow elastic tubing between rim and felloe.

1,020,375. Automobile. Robert Symmonds, Jr., Kenosha, Wis., assignor to Thomas B. Jeffery, Kenosha, Wis.; Kate E. Jeffery, Charles T. Jeffery, and Harold W. Jeffery, executors of said Thomas B. Jeffery, deceased. Filed Mar. 11, 1908. Serial No. 420,320. Means of supporting transmission members.

1,020,376. Adjustable Steering Post for Automobiles. Robert Symmonds, Jr., Kenosha, Wis., assignor to Thomas B. Jeffery, Kenosha, Wis.; Kate E. Jeffery, Charles T. Jeffery, and Harold W. Jeffery, executors of said Thomas B. Jeffery, deceased. Filed July 22, 1909. Serial No. 508,937. Toothed segments provide the means of adjustment.

1,020,379. Throttle Valve for Carburetters. Mathias Weiwoda, New York, N. Y., assignor to George W. Stevens, New York, N. Y. Original application filed Feb. 20, 1909, Serial No. 479,045. Divided and this application filed Feb. 15, 1910. Serial No. 543,913. Rotatable sleeve.

1,020,385. Road Vehicle Suspension Arrangement. Leonard Eugene Cowey, Kew Gardens, England. Original application filed Feb. 6, 1909, Serial No. 476,551. Divided and this application filed Oct. 24, 1910. Serial No. 588,867. Helical spring operating on bell crank lever, adjustment being obtained by shifting the point of application of the spring.

1,020,417. Differential Gear. Guy M. Hartley, Dighton, Mich. Filed Mar. 18, 1911. Serial No. 615,287. Free wheels driven through the intermediary of double acting pawls and cogs.

1,020,437. Radiator Cap for Automobiles. Edmund B. Nelson, Cadiz, Ohio. Filed Feb. 10, 1910. Serial No. 543,143. Cap with cover held open by spring when bolt is not engaged.

1,020,523. Roller Bearing. Ernest J. Taylor, Highlandville, Mass. Filed May 17, 1907, Serial No. 374,305. Renewed Aug. 7, 1911. Serial No. 642,820. Separating rollers of smaller diameter between the load bearing rollers.

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STOCK CHAMPION INTERNATIONAL CHAMPION

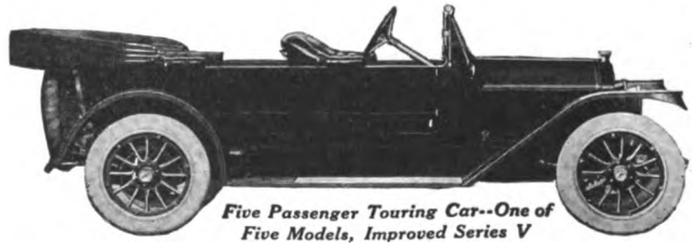
National 40

Defender of America—Conqueror of Europe

The National leads both Hemispheres in actual demonstration of power, speed reliability and stamina.

But for the reliable National car—and its consistent work in winning the International 500-Mile Sweepstakes Race in 1912, the foreign cars would stand supreme leaders. But the National won—while every other race of 250 miles or more went to the foreign invaders. The 500-mile race was the only 1912 race entered by the National builders.

First in Utility and Luxury



Five Passenger Touring Car--One of Five Models, Improved Series V

Five Models $2750 to $3400

We Claim the Greatest Value Today Is the National Improved Series V Cars

Long stroke motor (4⅞x6); left-side drive, center control, Gray & Davis electric starter, Gray & Davis dynamo electric lighting system, Bosch double dual magneto, multiple jet carburetor, 12-inch Turkish upholstery, tire pump integral part of motor, 128-inch wheel base, Hoffecker speedometer, full floating rear axle, concealed baggage compartments, tire carriers, full heavy nickel trimmings, powerful brakes, perfect oiling system, robe rail, foot rest, foot mat in running board, concealed tool box, electric horn, top, curtains, adjustable ventilating and rain vision windshield.

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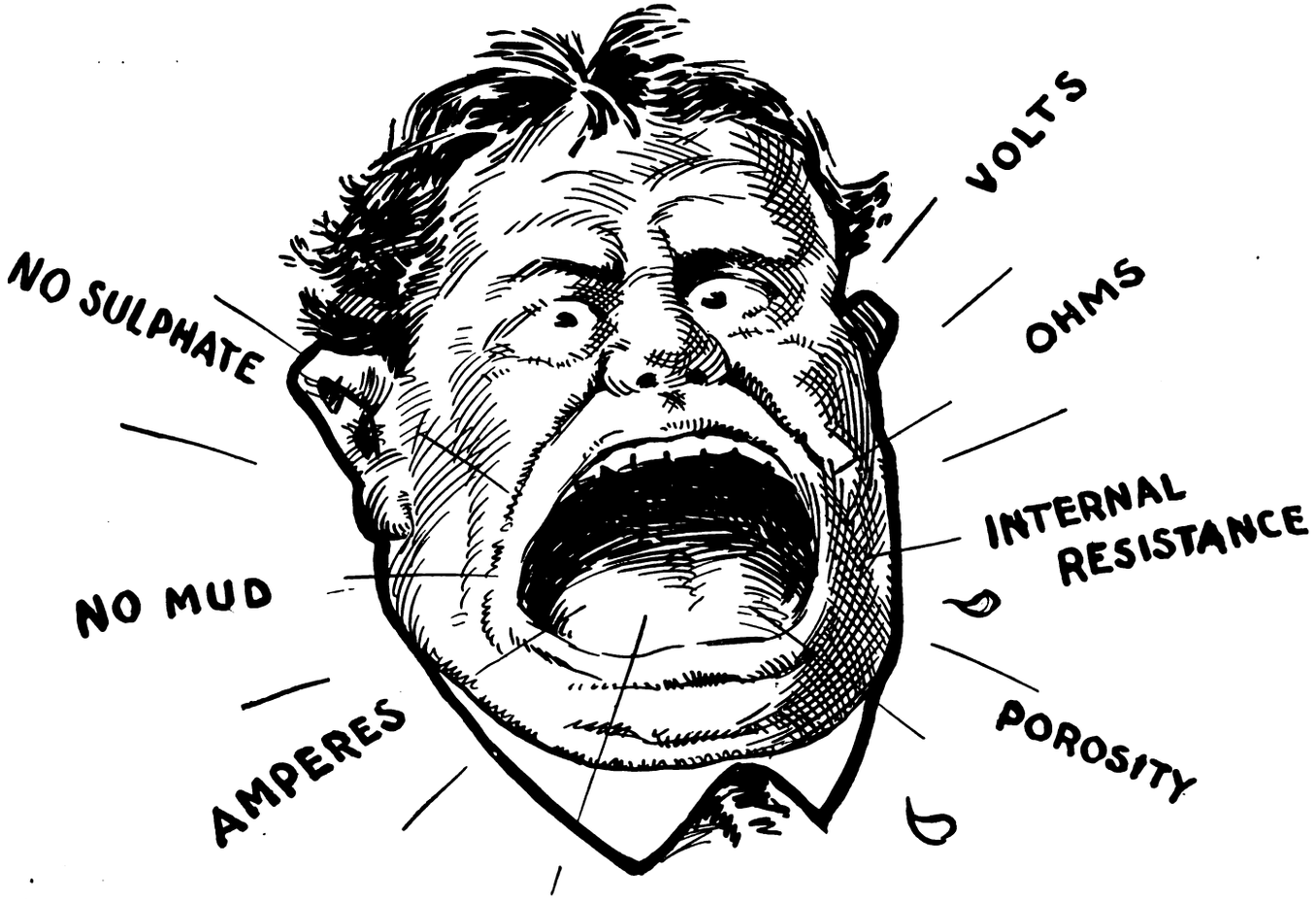
NATIONAL MOTOR VEHICLE CO., Indianapolis, Ind.

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When MOTOR WORLD'S "Before Shows" Number, dated December 26th—issued three weeks before the first of the two big shows—reaches your desk (or home) you will reach and grab and well-thumb it over from cover to cover because of its novelty and its advance editorial and advertising information.

If you are an alert buyer of advertising space you will realize that your unusual interest in this issue will be identical with that of every other recipient. Therefore you ought to grasp—if you have not already—the opportunity to have ***your*** advertising message read by the other 7,999 regular readers who are interested professionally in the motor industry (the same as you are).

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CONFUSING TECHNICAL TALK

of the kind that is sometimes used, tells the average man nothing. What you want to know is, how many hours (clock hours) will the GLBA Storage Battery light all the lamps on a car. There is just one way to find out; hook up your Electric Lighting Outfit with an GLBA Battery, to your lamps, push the button and keep accurate tab on the time it takes to discharge battery. Do it yourself, don't take our word for it. You'll be surprised to learn how much better—and longer—your lights will burn than with other Batteries claimed to be "just as good." But always BE SURE IT'S AN

GLBA

Use Class A GLBA Battery with an Electric Lighting Generator
Use Class B GLBA Battery with an Electric Self-Starter

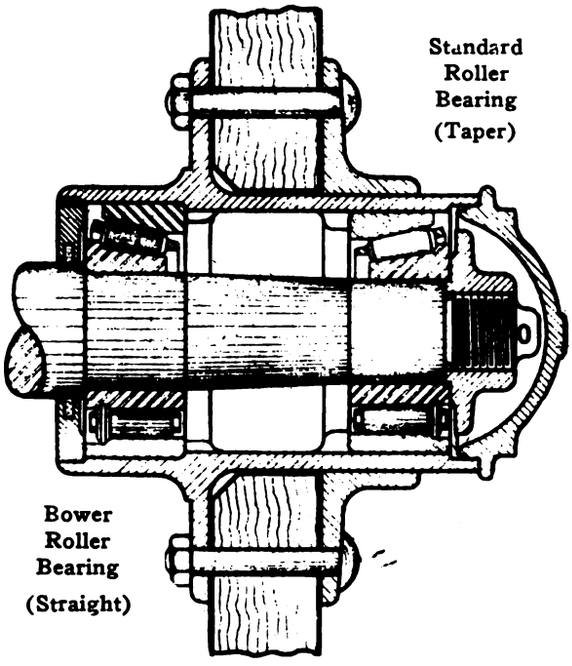
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Willard Storage Battery Company
CLEVELAND, OHIO

New York Branch—136 West 52nd Street Chicago Branch—2241 Michigan Avenue Detroit Branch—1191 Woodward Avenue
San Francisco Branch—243 Monadnock Building

Depots in All Principal Cities in the United States, Canada and Mexico

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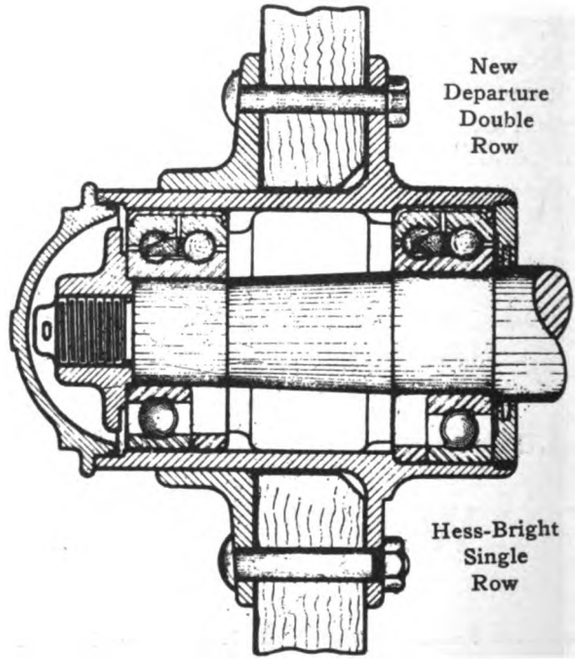
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The axles that come equipped with a choice of the finest bearings.

It's one thing to make axles equipped with one type of bearing. It's another thing to make axles of splendid mechanical construction adapted to every possible use.

The Sheldon Axle Company offers in its most complete line of excellently constructed axles for 1913, Steel Wheels, or hubs for wood wheels, with your choice of the following high class bearings:

Standard Taper Roller Bearings
Bower Straight Roller Bearings
Rhineland Double Row Annular Bearings
New Departure Double Row Annular Bearings
Hess-Bright Single Row Bearings
New Departure Single Row, Radax or Norma Ball Bearings



See Our Exhibit at Space 321, Madison Square Garden Show.

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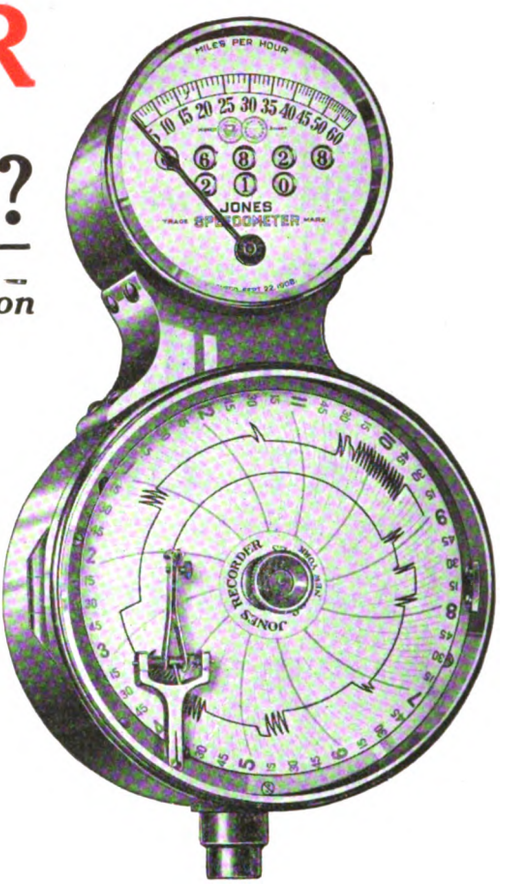
Will There be a

JONES RECORDING SPEEDOMETER

On Your New Car?

The Last Word in Speedometer Construction

You could search the whole world over and you could not find a more fascinating instrument for the automobile, than the NEW JONES RECORDER, which shows the speed, season mileage and trip mileage, the time of day, and a permanent record of every movement, speed and distance attained by the car.



This is the new Jones Recording Speedometer.

The very latest thing on the market and just ready for Christmas delivery.

You will say that it is the most wonderful instrument you have ever seen.

THE JONES SPEEDOMETER

Main Office: Bush Terminal, New York

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Bankrupt Sale

By Order of the United States Court

SEALED BIDS will be received until 1.30 P.M. Monday, December 23, 1912, for the entire plant, equipment and material of

The Grabowsky Power Wagon Co.

AT DETROIT, MICHIGAN

Appraised at $316,000.00

and now under operation by the Trustee.

Nine Acres of Land

New Concrete Buildings

Spiendidly Equipped Plant

BEST LOCATION IN DETROIT

Bids will be received for all or any part of the plant and equipment.

SECURITY TRUST COMPANY

Detroit, Michigan

Trustee in Bankruptcy

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The CONOVER
"The Dependable Safe-Guard"



A NEW SAFE-GUARD

THE Conover was not made just to supply a "bumper" with another name—nor one with added "wrinkles."

IT begins all over again.

FIRST, a massive channel-bar with a broad, flat protection surface—made to take blows, and to be hammered easily back into shape, if dented.

SECOND, heavy, semi-elliptic springs (not spiral ones) with four (not two) contact points.

THIRD, an unreserved guarantee by its makers—to replace it free of charge if broken any time from any cause within a period of two years.

THE idea is absolute protection for the costly and vital front parts of a car—parts which otherwise are *bound*, sooner or later, to be damaged—for simply the original price of *one* safeguard.

HERE is certain insurance—economy—satisfaction.

Best quality Steel heavily enameled in Black, Royal Blue, French Gray or Maroon. One size only: bar 2 inches wide . . . . . (Any other color of enamel $5.00 extra)	$15.00
Best quality Steel, Brass or Nickel plated. One size only: bar 2 inches wide . . .	17.50
Solid Bronze finished in either Brass or Nickel. Two sizes: bar 2 or 2¾ inches wide . .	25.00



LOVELL-McCONNELL MFG. CO.
Sellers: Newark, N. J.

NEW JERSEY TUBE CO.
Makers: Newark, N. J.

CONOVER
"The Dependable Safe-Guard"



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The Cross Roads Where They All MUST Meet

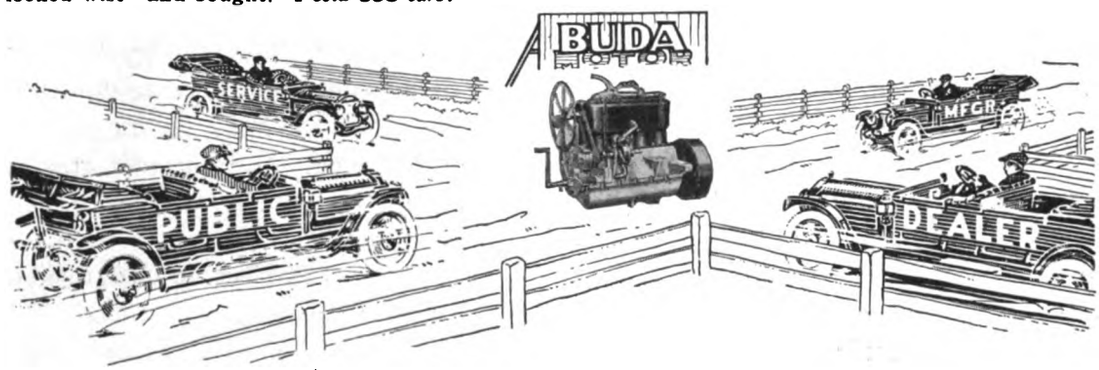
Here are two stories that indicate it:

The Salesmanager of a prominent Automobile manufacturer told us the first. He said that during a recent contest which he inaugurated among his salesmen, he analyzed the sales methods of his men to determine the comparative value of *general* statements and *specific* statements. The final markings ran all the way from 29% to 94%. And the significant fact was that only one of those salesmen who used the *General Claim* method got above the 50% line (and he was a peculiarly magnetic personality)—and the lowest one of those who used the *Specific Claim* method was only 56%. *General Claims* in this case were "best carburetor," "superior motor efficiency," etc. Specific claims were the_____carburetor, the_____magneto, and the

BUDA MOTOR

The other story comes from a dealer.

We quote his words as we recollect them: "Last year I sold 196 cars—and I went on the basis that the public didn't give a d.... about technical facts because they couldn't undertsand them. This year I sold my cars as a combination of a ..... body, a ..... magneto, ... tires, a ..... Carburetor and a..... (it was a Buda) motor. Whether my customers understood all this jabber I have my doubts, but they looked wise—and bought! *I sold 358 cars!*"



The Buda crossroads is now where the manufacturers and dealers must go to meet the Public demand. It is there that the Public finds Service. It is there that the Public has learned to look for

—demonstrated efficiency (in thousands of cars now in daily use)
—the choice of a score of most prominent manufacturers
—that Buda special oiling device
—that Buda exclusive get-at-ableness
—that Buda progressiveness which made it the PIONEER IN THE "CAST-IN-BLOCK" METHOD IN U. S.
—the assurance of always being able to obtain interchangeable parts from a company so well established and safely financed.
—and the following 1913 specifications.

SHOW NOTICE

Be sure and see our exhibits at the Automobile shows, as follows—
Grand Central Palace, New York, January 11th to January 25th. Space No. 304, located in the Balcony.
Madison Square Garden, New York, January 11th to January 25th. Space No. 326, located in the Concert Hall.
Coliseum, Chicago, February 1st to February 15th. Spaces Nos. 102, 103, 104, located in Coliseum Annex, 2nd floor.

1913 Specifications

Model "T" Motor, 4¼ x 5½
Model "Q" Motor, 3¾ x 5½
Model "O" Motor, 4¼ x 5½
Model "M" Motor, 3¾ x 4½

Long Stroke, Enclosed Valves, Noiseless Timing Gears, Self-contained positive Oiling System. Extra large Valves and Bearings. Send in for a special Bulletin on the Motor suitable for your needs.

BRANDENBURG & COMPANY

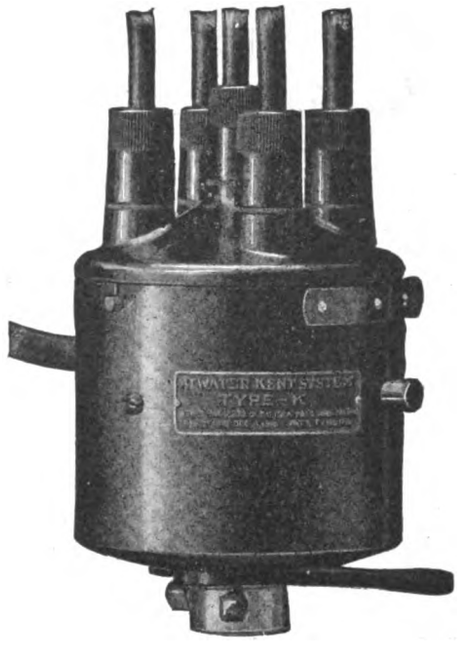
1108 So. Michigan Ave. Chicago, Ill. | 57th and Broadway New York, N. Y. | Ford Bldg. Detroit, Mich.

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THE present demand for self-starting and lighting equipment has created a demand for an ignition system capable of producing a hot, dynamic spark independent of the engine speed.

This demand is being successfully met by

The Atwater Kent Ignition System



the starting button of which produces, not a few weak sparks, but a single heavy flame-like spark, thus insuring at all times the perfect ignition of any mixture that will burn.

Other salient features of the Atwater Kent System are the extreme simplicity of mechanism, only three moving parts, one contact, one adjustment and one non-vibrating coil.

While the Atwater Kent System is high in value and reputation, it is not high in price. In fact, it will cost less than half as much as a good magneto and will give superior results at a much less cost of upkeep.



We can now furnish two types of the Atwater Kent System for use on cars as sole ignition in place of the magneto, in conjunction with lighting and starting equipment.

***Type "F"* without Automatic Spark Control.**

***Type "K"* with Automatic Spark Control and insulated primary circuit.**

No matter what the requirements, the Atwater Kent System of Ignition affords ideal ignition.

Write today for detailed information and illustrated booklet "D."

ATWATER KENT MFG. WORKS

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EISEMANN

Here's sound advice to Motor Truck Dealers and Manufacturers, too.

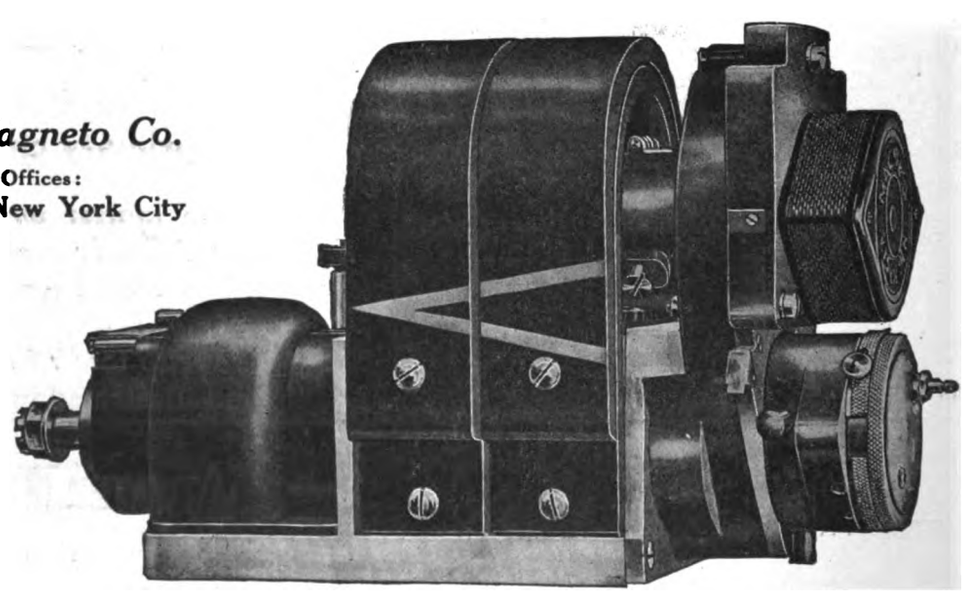
Eisemann Magnetos with automatic spark control assist you greatly in getting repeat orders.

IF you want disinterested confirmation of this statement we ask you to communicate with any of the many prominent makers who use Eisemann Magnetos with automatic spark control on their output—or any of the successful dealers who handle these trucks.

We know what the answer will be, for these same people have told us unreservedly that this type instrument has done more to solve the ignition problem in motor truck manufacture than any one other invention ever brought out.

Of course automatic spark control with its attendant simplifying of the car control—its enforced economy of operation, and increase of motor life is desirable on pleasure cars as well as upon commercial cars. But in the commercial field you must show economy—you must show simplicity—you must show low upkeep cost. So of necessity the automatic spark control magneto is more valuable as a sales asset in the commercial field than in the pleasure field.

It is, however, no greater asset to the car mechanically one place than the other, and every high grade car should be equipped with this masterpiece of Eisemann production.



The Eisemann Magneto Co.

Sales and General Offices:
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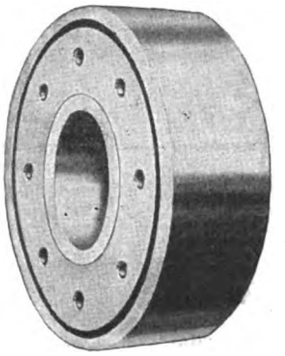
Indianapolis:
514 N. Capitol Ave.

Detroit:
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Hyatt Quiet Bearings



Hyatt Flexible Rollers will not crush under load because of their being hollow. The strength of these rollers is dependent upon the section of the steel out of which it is formed as well as the elastic limit of that material.

Every size bearing is capable of carrying a certain load at a certain speed. If the carrying capacity is greatly overreached, the bearing cannot be depended upon to give permanent satisfaction. Any other automobile member subjected to excessive stress will fail under similar conditions. It is simply a matter of proper engineering.

When reasonably well mounted and operated under its proper duty, the Hyatt Roller Bearing lends itself to practical conditions as no other can. When subjected to faulty mounting—imperfect alignment—unreasonable abuse—and over-loading, no other bearing is even comparable.

HYATT ROLLER BEARING CO.
DETROIT, MICHIGAN

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1913 Motorcycle Shows

and what the Bicycling World and Motorcycle Review will do in connection with them.

New York Show

will be held in connection with the Automobile Board of Trade Annual Show in Grand Central Palace, under auspices of the Motorcycle Manufacturers' Association

January 11-18

We will publish two big issues in connection with this show.

New York Forecast Number
January 7

New York Report Number
January 14

The Chicago Show

will be held at the Manufacturers' Exhibition Bldg., 1319 Michigan Avenue, and will be conducted under the auspices of the Motorcycle Manufacturers' Association

February 3-8

Two special issues will be published descriptive of this show.

Chicago Forecast Number
February 4

Chicago Report Number
February 11

We are ready now to book reservations of space for all or any of the four above described numbers of **THE BICYCLING WORLD AND MOTORCYCLE REVIEW,** and our service department is now preparing copy and sketches for our advertisers' use in these big issues. Each of the Show Numbers will have extra circulation without increase in price of space and our regular advertisers may use extra space on their contracts at minimum rates. This is a splendid opportunity of which the entire trade should take advantage.

Copy and cuts can be handled one week in advance of each publication date, but we recommend reservation now and an early preparation of copy. Can we help you with this copy? And how much space can we reserve?

BICYCLING WORLD AND MOTORCYCLE REVIEW
1600 Broadway **New York**

New York *and* Chicago

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Knox

MARTIN TRACTOR



Maximum Carrying Capacity
Minimum First Cost
Minimum Maintenance
Minimum Turning Radius

What It Is

Not a Theory But a Proven Success in a Year's Gruelling Work. Many in Successful Operation. 5 to 10 Ton Capacity. Full Details Explained in Tractor Catalog. Send Today.

A motor unit that may be attached to any heavy vehicle designed to be drawn by horses; the combination making a five-wheeled motor-drawn vehicle.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO EXCESSIVE COST OF RUBBER TIRES. Wagons have been doing good work for many years on steel tires and there is no reason why they will not continue to do so when drawn by the tractor; the heaviest part of the load is always carried on steel tires.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO EXCESSIVE VIBRATION ON STIFF SPRINGS. All working parts of the tractor are carried on springs as resilient as those of a pleasure car.

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO SUDDEN STARTING OR STOPPING OF HEAVY LOADS. The cushioning of the shock between the engine and the load is one of the most important advantages gained, (fully explained in catalog).

IT SAVES HEAVY MAINTENANCE CHARGES DUE TO NEGLECT ON ACCOUNT OF INACCESSIBILITY OF PARTS—all parts of the tractor being more accessible than on a touring car.

IT SAVES HEAVY MAINTENANCE CHARGES due to frame twist. The tractor accommodates itself to all road unevenness.

The single front wheel can be turned at 80 degrees angle, enabling the driver to back to any position or turn completely around in a narrow street.

Send for further information and prices

KNOX AUTOMOBILE COMPANY (Tractor Department) Springfield, Mass.

BRANCHES—New York, Chicago

AGENTS—The Knox Martin Tractor is the Greatest Proposition in the Commercial Field Today. Fully Protected by Patents.

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Prest-O-Starter

Starts your engine (old or new) quickly and easily in coldest weather

For Four Cylinders $20

For Six Cylinders $25

$1.50 extra for two-way valve necessary when the same Prest-O-Lite is used for both starting and lighting.

Here's a starter that adds practically no weight to your car, is perfectly simple and is as durable as the engine itself. Easily applied to any engine, old or new, very economical in the use of gas, and requires no expert repairing.

How Prest-O-Starter Works

The principle of starting a motor with Prest-O-Starter is the same as "starting on compression." A measure of acetylene, at low pressure, is pumped from your Prest-O-Lite into the cylinders.

Touch your spark—your engine starts.

Unlike "gasoline priming," it is not affected by heat or cold. It is certain.

In cool weather, by opening a valve on the dash, you can feed gas at low pressure into the intake manifold. This allows your engine to run on acetylene until it is warm enough to run to gasoline.

If the Prest-O-Starter did no more than prime your engine in this way during cold weather, this convenience would be well worth the price.

But Prest-O-Starter is more than a primer. When installed properly, it will start your engine, summer or winter, almost invariably without recourse to the crank.

Make Sure Your Starter Is Installed CORRECTLY — Look It Over!

The Prest-O-Starter is easy to install correctly. In fact, it's so very easy to install that some good factories and garages install it with utter carelessness, overlooking the one or two simple features vital to success in operation. Fortunately this is an easy matter for the car owner to correct, even if he isn't a mechanic.

Our literature tells you exactly how the Prest-O-Starter is installed, and how to adjust it. Anyone can give it the slight attention it may need or quickly tell a dealer where the trouble lies.

Every Prest-O-Starter is sold with the assurance of satisfactory service. The entire Prest-O-Lite Organization is back of every one. If you have any trouble, report it to us or to our nearest branch. We'll wipe it out quickly.

Insist Upon GETTING the Outfit COMPLETE

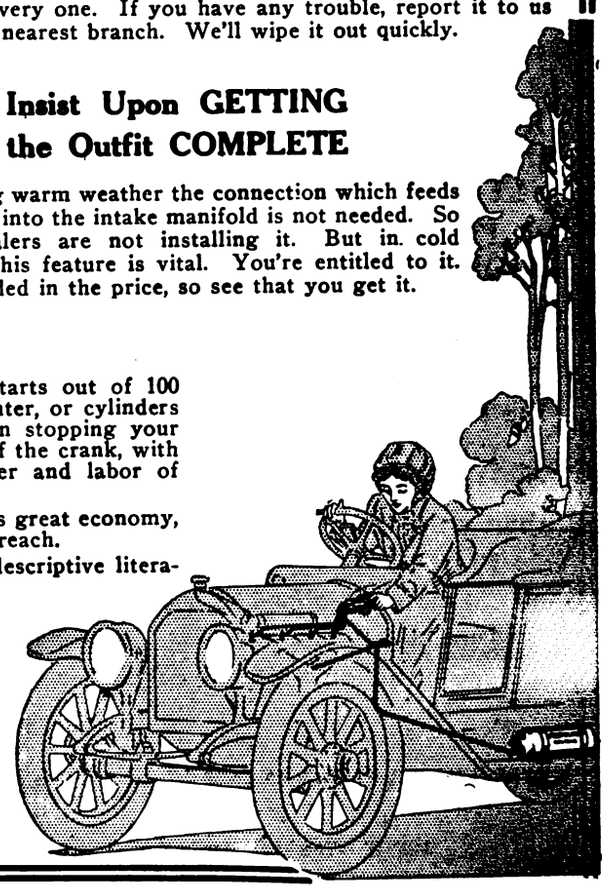
During warm weather the connection which feeds acetylene into the intake manifold is not needed. So some dealers are not installing it. But in cold weather this feature is vital. You're entitled to it. It's included in the price, so see that you get it.

Now—More Than Ever—You Need One

Your Prest-O-Starter, properly installed, will average better than 95 starts out of 100 attempts. The few failures are caused by your motor stopping on dead center, or cylinders filled with burnt gas. Both of these conditions can be easily avoided when stopping your motor. But should either or both happen, an eighth or a quarter turn of the crank, with the switch at neutral, will remedy the trouble at once, with all the danger and labor of cranking eliminated.

Rest assured that no other starter can give you as high efficiency with as great economy, durability and freedom from mechanical trouble. The price is within easy reach.

Get in touch with any of our branches—or your dealer—or write us for descriptive literature.



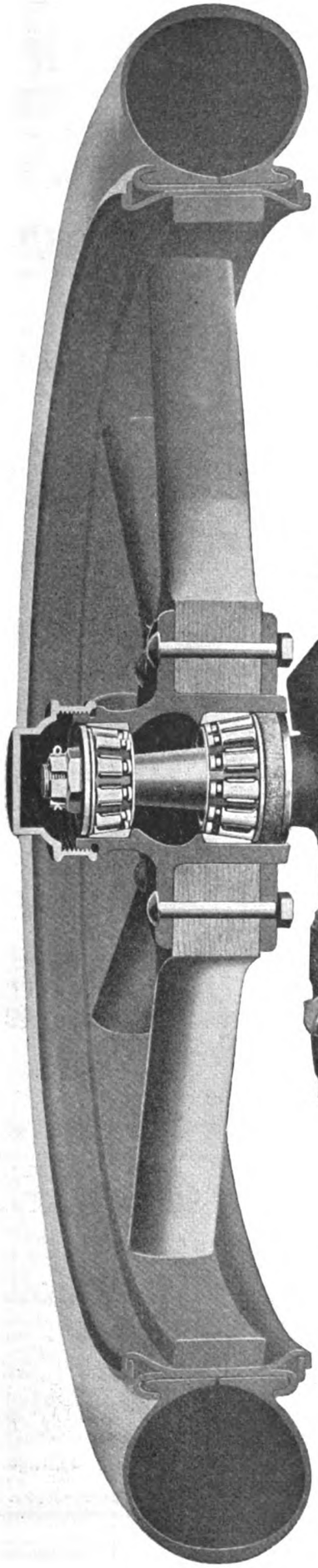
The Prest-O-Lite Co. 287 E. South St. Indianapolis, Ind.

BRANCHES :

Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jacksonville, Kansas City, Los Angeles, Memphis, Tenn.; Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Portland, Ore.; Providence, St. Louis, St. Paul, Minn.; San Antonio, San Francisco, Seattle, Syracuse, Merritton, Ont.; Toronto, Ont.; Winnipeg, Manitoba.

Exchange Agencies Everywhere

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Right Here is a Crucial Point of Your Car

The front axle of your car must not give way.

It's the part that protects your life and the lives of your friends.

Head on, it meets all the shocks from rough roads and withstands the constant vibration.

Human safety demands the utmost in good axle and bearing construction.

TIMKEN
AXLES & BEARINGS
ARE MEETING THE TEST

They are found at the front of a majority of the leading makes of motor cars—pleasure and commercial.

Doing valiant service. Protecting thousands of lives.

Giving comfort and satisfaction in driving.

Why Timken Axles and Bearings are Meeting the Test

Timken-Detroit Axles are made by an organization of men absolutely, and wholly devoted to *one idea*—good axle building.

Men who work together—in unison—who have worked together for years—whose experience goes way back into the era of horse-drawn vehicles.

Men who built successful axles for the earliest motor cars—both pleasure and commercial.

Men who have added to their own the experience of all the thousands of users of Timken-Detroit Axles.

Men who make a special study of axle design in the light of all domestic and foreign practice.

Men who care so much for the reputation of Timken-Detroit Axles that they do not neglect the least element of design nor risk imperfection in the smallest part.

The integrity and ideals of such an organization are the best guarantee to the builder and owner of a motor car.

Materials, methods—the finished product are but the expression of that integrity and those ideals.

Timken Tapered Roller Bearings owe their superiority to the principles of their design.

They are correct in theory—proven in practice.

The ideal motor-car bearing must do four things:

1. *It must reduce friction loss to the minimum.* Timken Bearings do reduce it to a negligible quantity.

2. *It must carry the heaviest possible load in proportion to its size.* Timken Bearings do this because they carry the load on the *whole length* of rollers, instead of the points of balls.

3. *It must meet side pressure or end thrust.* The rollers in a Timken Bearing carry end thrust, too, along their whole length—because they are tapered and revolve at an angle to the shaft.

4. *It must be adjustable for wear.* The Timken Bearing is the one bearing that can be adjusted to take up the minute wear *without sacrificing any of its characteristics.*

You can get the whole story of axle and bearing importance and construction by writing to either address below for the Timken Primers. T-3 "On the Care and Character of Bearings," and T-4 "On the Anatomy of Automobile Axles."

THE TIMKEN-DETROIT AXLE CO., DETROIT, MICH.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

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The Largest Automobile Supply House in America

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at the

AUTOMOBILE AND MOTOR BOAT SHOWS

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Manufacturers of ACCESSORIES, who are making Parts, Fittings and Sundries for use on Automobiles, Motor Boats, Motorcycles or Aeroplanes, are requested to send us catalogs or circulars and make us a proposition regarding cataloging and handling their material, and, in quoting us, please take into consideration the fact that we have **Fourteen Branch Stores** and quote our prices F. O. B. Each Branch.

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United States Motor Company
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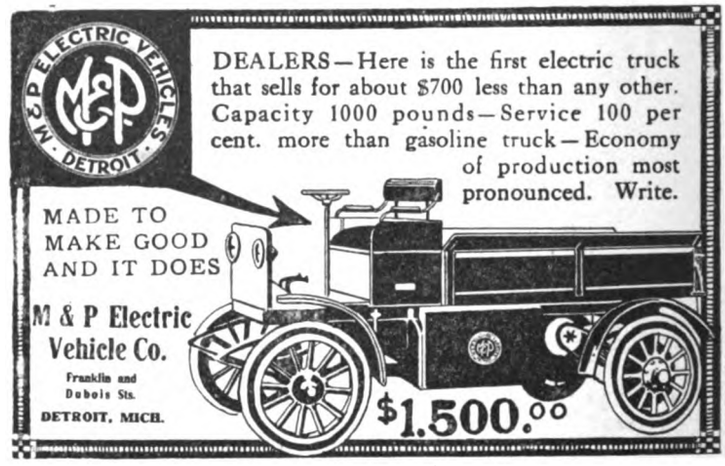
Pursuant to decree of the United States District Court for the Southern District of New York, the properties of the above companies will be offered for sale in Room 47 of the Post Office Building, Borough of Manhattan, City of New York, on

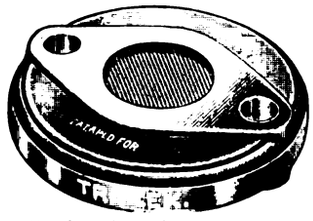
January 8th, 1913
at ten o'clock in the forenoon.

For copies of decree of sale, giving terms, conditions and particulars of sale and for any and all further information reference may be made to the undersigned.

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ROBERTS WALKER,
Receivers,
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Increases Power
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Tires Inflated to the Right Pressure

He insists that this is tire economy and

Saves You Money

How do you know what pressure you have in your tires? A

SCHRADER
UNIVERSAL
Tire Pressure Gauge

(Trade Mark Registered in U. S. Patent Office)



(Patented March, 1898—Other Patents Pending)

will tell the exact pressure in your tires at any time, day or night, by simply holding this Gauge to your Valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the Gauge can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the Indicating Sleeve can be pushed back into the Gauge with your finger. No catches or snaps to operate or get out of order. This Gauge is 2½ inches long over all, short enough to apply easily to the smallest diameter of wheel and can easily be carried in the vest pocket or the change pocket of your trousers.

Price $1.00 Each
Ready for Delivery Now

Guaranteed Simple and Absolutely Accurate

Can be obtained from all tire manufacturers and the dealers, or

A. SCHRADER'S SON, Inc.
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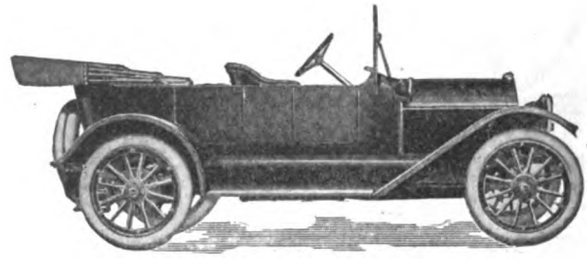
Marion

Of Particular Interest to Dealers and Garagemen

The handsomest automobile posters of the season are just off the presses—a brilliant lithograph hanger in five colors and a beautiful half-tone sheet in three colors. They are ready for immediate distribution—bound in tin for hanging.

We've made a limited number, two thousand of each. If you'll clip the coupon at the bottom or write on your business stationery, we'll send you one of each—as long as they last.

Don't miss seeing these posters and hang them in your show windows. They'll make people look in.



Model 37A, complete, $1475.

Marion cars were good ten years ago. They have been better each succeeding year. They are better now than ever. Four models in the 1913 line—37-A, 30-40 h.p. touring car, $1475; 48-A 48 h.p. touring car with electric starter, $1850; 36-A Bobcat speedster, 30-40 h.p., $1425; 38-A enclosed roadster, 30-40 h.p., $1475. All cars fully equipped —self-starter, electric lights, Q. D. demountable rims, Warner speedometer, windshield, silk mohair top, etc.

Write for literature, our fair sales agreement for dealers and see Marion cars at the shows.

The Marion Motor Car Company
J. I. HANDLEY, President
918 Oliver Avenue Indianapolis, Indiana

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918 Oliver Ave., Indianapolis.

Please send lithographed posters in colors. We handle the following cars (if any).....

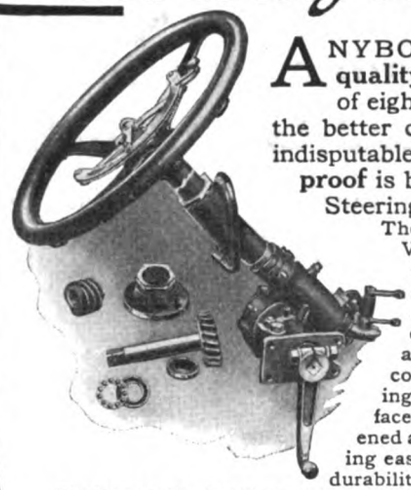
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ANYBODY can claim quality—but a record of eight years use on the better class of cars is indisputable proof. That proof is back of Warner Steering Gears.

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Dreadnought Moline M-40

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INTERLOCK INNER TIRES

Stop Tire Troubles

INVESTIGATE AND LEARN WHY SO MANY THOUSANDS OF MOTORISTS ARE DISCARDING INNER SHOES, RELINERS, FILLERS, AND OTHER MAKESHIFTS FOR INTERLOCK INNER TIRES—AND WHY INTERLOCKS ARE HANDLED AND RECOMMENDED BY THE BEST SUPPLY DEALERS AND TIRE HOUSES ALL OVER THE COUNTRY.

One weak point of the automobile to-day is that you can't depend on its tires. INTERLOCKS revolutionize this condition by making your tires so strong that blowouts become practically impossible. INTERLOCKS save half your tire expense—save repair bills—double your mileage—prevent punctures and completely free you from all fear of tire trouble.

What INTERLOCKS Are.—The INTERLOCK is a complete inner tire (not an inner shoe) which is placed between the outer casing and the inner tube to strengthen the outer casing and protect the tube. It is the only reinforcement which is locked by air pressure to the rim and which becomes an integral part of the tires, and, therefore, cannot heat or chafe. Even if the tire is broken the INTERLOCK will hold.

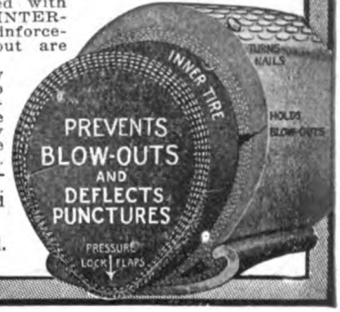
INTERLOCKS Insure Safety.—You know that the sudden blowing out of a tire may easily ditch any car when going at fair speed—the safety of INTERLOCKS should appeal to you.

Reduce Your Tire Expense.—You can have the tires on your new car equipped with INTERLOCKS if you specify them. INTERLOCKS are the only perfect tire reinforcement. They cost a little more but are cheapest in the long run.

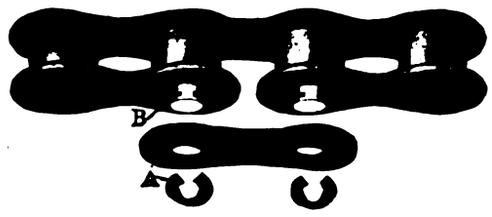
For your present car—ask any dealer or supply house, or write to us for the name of your nearest supply source. INTERLOCKS will make any fairly sound tire more than carry you through the season. They are easily placed and are made in all sizes.

We Want Dealers Everywhere.—Write for Special 30 Day Offer. Booklets, Prices, Records of Road Tests and Testimonials of users.

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BENZ

Since the introduction of BENZ cars to the motoring public of America no car has attained such world-wide supremacy as to its construction, standing up quality, and material. The new type of 35 and 50 H. P. BENZ models are the last word in automobile construction.

The noticeable features of this type of BENZ cars include the offset crank shaft, smokeless oiler, and SILENT CHAINS instead of timing gears.

The BENZ Carrosseries are noted for their beautiful lines and thorough comfort.

To those desiring AGENCY of this car the Benz Company will offer special terms. We want RELIABLE, ENERGETIC agents to further our interests for both BENZ pleasure cars and BENZ-GAGGENAU trucks, which today stand recognized by those who know, as the leading 6-ton truck. Wire or write us, no matter where you are.

Our PRICES compete with LEADING AMERICAN makes.

BENZ AUTO IMPORT COMPANY OF AMERICA
250 West 54th Street **New York, N. Y.**
Direct Branch of Benz & Cie., Mannheim, Germany.

FEDERAL TIRES "EXTRA SERVICE"
Federal Rubber Manufacturing Co. Milwaukee

Rudge Whitworth
Detachable Wire Wheels
fitted with
Houk (Quick Detachable) Rims
Guaranteed the Best in the World

Geo. W. Houk Company
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PULLMAN 1913
Three New Models—All Fully Equipped

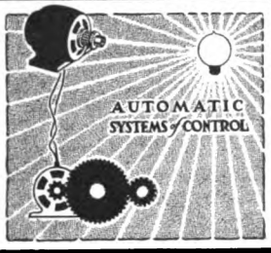
4-36	4-44	6-66
$1,675	$2,150	$2,750

We are building 500 extra PULLMANS for 1913—1500 in all. Our present dealers have spoken for 1000 and the increase is for new territory—possibly yours is open. Our SALES MAKING ORGANIZATION helps the agent—let us tell you how.

PULLMAN MOTOR CAR CO., York, Pa.

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Lighting - Starting

THE RESULT of TWENTY YEARS of EVOLUTION by ELECTRICAL SPECIALISTS

WARD LEONARD ELECTRIC CO.
BRONXVILLE, N. Y.

REPUBLIC
STAGGARD TREAD TIRES
and BLACK-LINE RED INNER TUBES



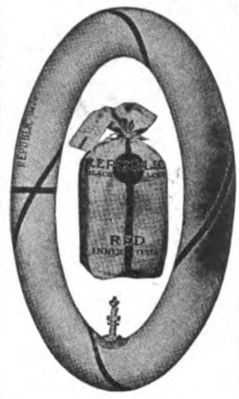
Republic Staggard Tread
Pat. Sept. 15-22, '08

Motorists who use Republic Staggard Tread Tires will tell you that they—Prevent skidding, make quick starts and short stops easy. Give double mileage because of the full-thickness tread under the studs.

Most Widely Imitated of All

We guarantee the Republic Black-Line Red Inner Tube to be as nearly perfect as a tube can be made—and is a fitting companion for the splendid Republic Staggard Tread.

The Best Tube Made



The Republic Rubber Co.
Youngstown, Ohio



Ready for 1913

"STANDARD" WHEELS

FOR PLEASURE OR COMMERCIAL CARS
One Passenger to 16 Tons Capacity

Send for Catalog No. 15

STANDARD WHEEL COMPANY, Terre Haute, Ind.



Watch the Advertising

Keep your eye on the Tirenew Magazine campaign; it is strong—complete—continuous—convincing—and it tells why Tirenew

Preserves Tire Life by Preventing Tire Decay

Narco Product — TIRENEW — Narco Product

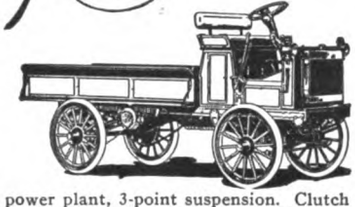
An unvulcanized liquid rubber compound with a base of pure gum—waterproofs and protects from ill effects of oil, moisture, sun and air—makes tires look like new.

Find Out by writing, what we offer the consumer in quality and what we offer dealers in profit and in complete and enthusiastic co-operation.

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The Truck Built by Truck Specialists



A high grade, dependable one-ton truck, accessible, simplified, and built to give service that is bound to satisfy the user.

Four-cylinder, water-cooled unit power plant, 3-point suspension. Clutch and flywheel in oil-tight housing. Lastingly good, therefore permanently popular.

This is a truck for which live dealers will find ready sale. Write for the terms.

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"The Car With A Conscience"

Write for the advance announcement describing 1913 models.

FOUR AND SIX CYLINDER MODELS

$1000 to $3000

OAKLAND MOTOR CAR CO.
250 Oakland Boulevard PONTIAC, MICHIGAN

INCREASE THE SAFETY AND EFFICIENCY OF YOUR CAR



DUPLEX EXTERNAL BRAKES

Work backward as well as forward, and are always sure. Have largest braking surface. Best in design, material, and quality of workmanship.

THE ROYAL EQUIPMENT COMPANY
436 Housatonic Avenue Bridgeport, Conn.
We also make Raymond Brakes, Raybestos Friction Facing and Gyrex, the Mixer

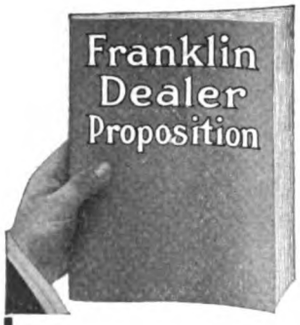
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Ignition Absolutely Sure

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Drop Hammer Forgings

cost very little more than castings. They are vastly superior and less expensive in the end.

WE ARE SPECIALISTS
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DROP HAMMER FORGINGS
from special analysis steel.
Send prints of parts you will need in
1913.
QUALITY AND SERVICE GUARANTEED
THE CONSOLIDATED MANUFACTURING COMPANY, Toledo, Ohio.

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$3,000,000 in plants affording the most superior facilities for fine work; also hardening and treating of the finished product. Most thorough inspection and testing system. Our own laboratory.

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H. W. CHAPIN, Gen'l Mgr. SYRACUSE, N. Y.



Climbs a 50% grade—Friction Transmission—any number of speeds. Five models—write.
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COVERT Transmissions made by Specialists

COVERT TRANSMISSIONS GIVE perfect service, because they are designed and built by men thoroughly acquainted with every requirement that is made by a motor car transmission.

For Commercial Vehicles of from 500 to 10,000 pounds capacity.

For Pleasure Cars of from 20 to 60 H. P.



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Great Dealer Proposition for those who want to handle a device that will increase engine efficiency, save fuel and keep the engine clean. Retails for $3. Big commission. Write today.

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New Departure Ball Bearings

SIGNIFY

Guaranteed Materials
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No ball bearing is so carefully made, closely gauged, persistently inspected and insistently standardized.

Catalog, data sheets, consultation service of our Engineering Department are yours for the asking.

Guaranteed Quality
Guaranteed Service and Capacity
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American Made for American Trade

The New Departure Manufacturing Co.
BRISTOL, CONN.
Western Branch, 1016-17 Ford Building, Detroit

American Made for American Trade

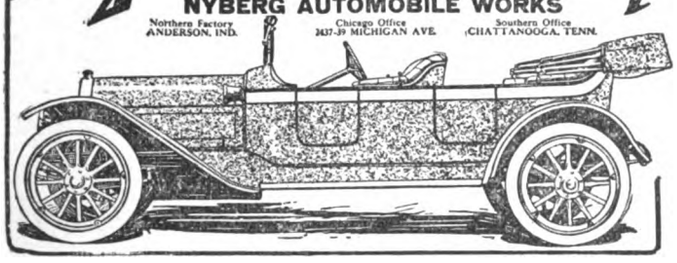
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Nyberg SIX $1750

ANNOUNCING 1913 TOURABOUT
Complete Specifications Sent on Request
—WE WANT LIVE DEALERS—

NYBERG AUTOMOBILE WORKS

Northern Factory ANDERSON, IND. | Chicago Office 2437-39 MICHIGAN AVE. | Southern Office CHATTANOOGA, TENN.



Be Prepared

to meet the demand we are creating for you on the

NEW POSITIVE LOCK STOP

TWITCHELL AIR GAUGE



"Tire Insurance for $1.00"

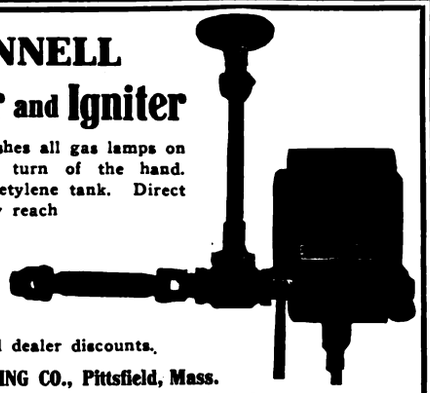
The best, simplest, most accurate, most durable and most easily read tire gauge on the market.

THE TWITCHELL GAUGE CO.
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THE GRINNELL Gas Controller and Igniter

Lights, dims and extinguishes all gas lamps on the car through a simple turn of the hand. Coupled to valve-stem of acetylene tank. Direct control. Always within easy reach

Convenient
Safe
Dependable



Write for booklet and dealer discounts.

THE G. C. A. MANUFACTURING CO., Pittsfield, Mass.
Sole Licensed Manufacturers for the United States.

In the year 1913

More Remy Magnetos

will be used on American Cars THAN ALL OTHERS COMBINED. We are the world's largest manufacturers of Magnetos, Electric Lighting and Starting Equipment for Motor Vehicles.

Standardize Your Car — Specify Remy

REMY ELECTRIC COMPANY
Factory — Anderson, Indiana — General Offices
Branches and Service Stations in Automobile Centers.

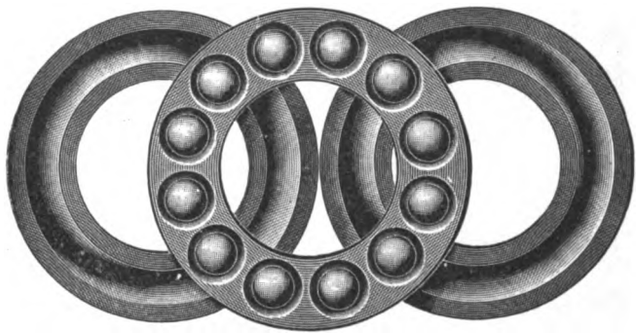
The Reasons for Jencick Quality and Jencick Prices are worth knowing.

JENCICK MOTORS For Motor Trucks

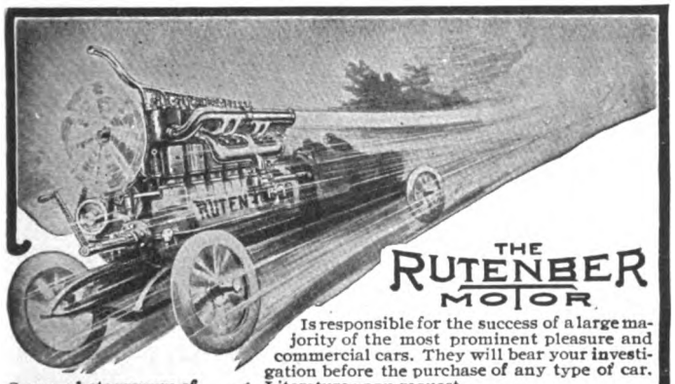
from base to spark plug, have features that are "Different and Better."

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WE MAKE THE BEST



BANTAM ANTI-FRICTION CO., Bantam, Conn.



Large photogravure of the above cut for framing 14c in stamps.

THE RUTENBER MOTOR

Is responsible for the success of a large majority of the most prominent pleasure and commercial cars. They will bear your investigation before the purchase of any type of car. Literature upon request.

RUTENBER MOTOR CO., Marion, Ind.

THE LONG HORN

The One Mechanical, Never Failing Warning Device

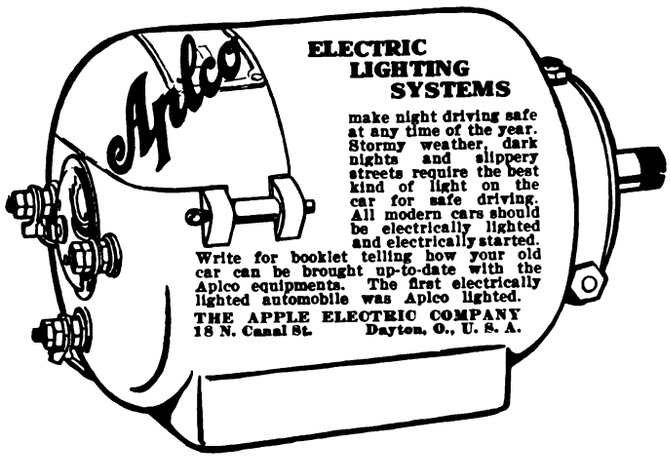
Costs Little to Buy— Costs Nothing to Operate

No Battery—No Wire—No Bulb—No Motor to break down or fail to work.

THE G. PIEL COMPANY 13th Street and Boulevard LONG ISLAND CITY

Philadelphia, 1416 Vine St.; Boston, 109 Massachusetts Ave.; Minneapolis, 70 So. 10th St.; Buffalo, 852 Main St.; San Francisco, 544 Van Ness Ave.; Los Angeles, 1229 So. Olive St.; Seattle, 917 E. Pike St.; Portland (Ore.), 329 Ankeny St.; Denver, 15th and Curtis Sts.

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ELECTRIC LIGHTING SYSTEMS

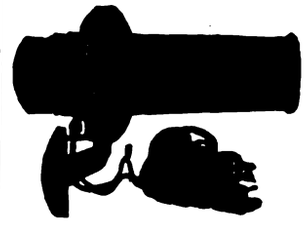
make night driving safe at any time of the year. Stormy weather, dark nights and slippery streets require the best kind of light on the car for safe driving. All modern cars should be electrically lighted and electrically started.

Write for booklet telling how your old car can be brought up-to-date with the Aplco equipments. The first electrically lighted automobile was Aplco lighted.

THE APPLE ELECTRIC COMPANY
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NEWTONE Motor Horns

Prices are the lowest for which horns of Dependable qualifications can be bought

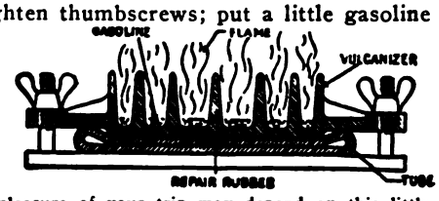


Torpedo Type
Price $20

Automobile Supply Mfg. Co.
220 Tuxlic Place, BROOKLYN, N. Y.

How to Repair an Inner Tube

Directions: Place tube between plates of the Imperial Vulcanizer (see cut); tighten thumbscrews; put a little gasoline in pronged receptacle; ignite. You have made a permanent repair in 15 minutes; saves time; and saves money.



Weighs 3 pounds. The pleasure of your trip may depend on this little friend. Have one with you always.

PRICE, $3.50
NICKEL PLATED
Patent Pending

Complete with enough rubber for 40 punctures. At your dealer's or sent by express.

Guaranteed to Satisfy or Money Refunded

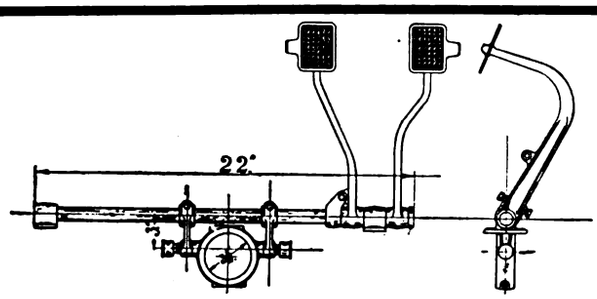
McGRAW TIRE & RUBBER CO., Dept. E, East Palestine, Ohio

THE NEW PROCESS RAW HIDE CO.

Cut Gears of Quality
Complete Differentials.

THE NEW PROCESS RAW HIDE CO.
SYRACUSE, N. Y.

THE NEW PROCESS RAW HIDE CO.



Clutch and brake pedal assemblies to operate with cone clutch. Write us regarding your requirements.

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CLEVELAND

KISSELKAR TRUCKS

Complete line of commercial vehicles—all type bodies—special bodies designed. KisselKar Trucks have excess capacity, reserve power. Low fuel cost—sizes to give economical service under any conditions.

1500 Lbs., 1, 2, 3, 4, 5 Ton Trucks

KisselKar Service keeps down operating costs. Write for special truck catalog.

Kissel Motor Car Co., 159 Kissel Ave., **Hartford, Wis.**



TRUCK SPROCKETS

ALL SIZES **ANY PITCH**

HYDRAULIC PRESSED STEEL CO.
CLEVELAND, OHIO

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"Distinctly Complete"

Electrically Self-Started and Lighted — Inter-State — Six Models 40 and 50 H. P. Fully Equipped

Model 40—5 Passenger, Fore Door Touring Car.
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Model 42—Roadster type—all with the splendid new en bloc motor, 4½ inch bore, 5½ inch stroke. 40 H.P..... $2400

Model 50—7 Passenger, Fore Door Touring Car.
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Fully equipped with top, windshield, speedometer, gasoline gauge, 36" wheels, demountable rims, and automatic tire pump.

All fully described in our Art Catalog. Send for one today.

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Boston Branch: 153 Massachusetts Ave. Omaha Branch: 310 S. 18th St.

HAVERS "Six-44" $1850
Touring Car and Roadster Types. 44 h.p. 6 Cylinders. Unit Power Plant, 3-Point Suspension. 122 in. Wheel-Base. 36 x 4 Tires.

HAVERS SIX

HAVERS "Six-55" $2250
Touring Car and Speedster Types. Electric Starter. Electric Lights. 55 h.p. 128 in. Wheel-Base. 36 x 4 Tires. Fully Equipped.

Write for full specifications
HAVERS MOTOR CAR COMPANY, Port Huron, Mich.

Hook up with COLE

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Series Eight comes in Three Chassis:

Cole Sixty six cylinder Touring Car, five passenger convertible to seven passenger, 132-inch wheel base, Delco electric lighting, starting and ignition. $2485

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WRITE TODAY for Cole Blue Book and dealer's proposition.

COLE MOTOR CAR CO., Indianapolis, Ind.

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Hupmobile

Hupmobile "32" Touring Car, Fully Equipped, $975 F.O.B. Detroit
Long-stroke motor, 3¼ x 5½ inches. Enclosed valves. Three bearing crank shaft. Unit power plant. Multiple Disc clutch. Three speeds forward. Sliding gears. Full floating axle. Center control. Zenith carburetor. Bosch magneto. 106-inch wheelbase. 32 x 3½ inch tires. Quick detachable rims. Mohair top with envelope. Jiffy curtains. Windshield. Rear shock absorber. Prest-O-Lite tank. Gas headlights. Oil side and tail lamps. Tools—horn. Trimmings, black and enamel. Standard color, black. Magneto and camshaft driven by silent Coventry chain.

Hupmobile "32" Roadster, Fully Equipped, $975 F.O.B. Detroit
Chassis and specifications same as Touring Car. Large turtle back dust proof compartment for extra accessories, tires and baggage.

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Chassis same as Touring Car. Enclosed panel body. Two cushioned lazy-back seats. Carrying capacity, 800 lbs. Chassis and body painted black, high-class finish. Two-piece windshield. Prest-O-Lite tank. Gas headlights. Oil side and tail lamps. Quick detachable rims. Tools—horn. Trimmings, black and nickel.

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THE ULTIMATE CAR
(KNIGHT TYPE MOTOR)

The first American Car to adopt the Silent Knight Motor—the engine used by Daimler, Mercedes, Panhard and Minerva.

THE F. B. STEARNS CO.
CLEVELAND, OHIO
Branches and Dealers in 125 Cities

Type 35 Series A and B Newport



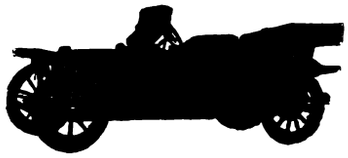
$2,750 Fully Equipped

MERCER THE CHAMPION LIGHT CAR

Lift up the hood of any Mercer and you will learn why it is "the most talked of" automobile in America today.

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WE have published a very interesting book on the advantages of Underslung construction. It is of value to dealer or individual. It tells of our full line which ranges in price from $1475 to $4500. Write for a copy today.

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MARMON
"The Easiest Riding Car In The World"

The Marmon "32"
32-40 H.P., 120-inch wheelbase, self starting, dynamo lighting, with body types to meet every requirement and corresponding equipment —$2,850 to $4,100

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INDIANAPOLIS (Est. 1851) INDIANA

Sixty Years of Successful Manufacturing

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Some automobile owners are always cleaning their spark plugs—others who use Reliance Plugs don't have to.

The Reliance book, "Ignition and Spark Plug Talk," tells why. Supposing you write today and get a copy.

JEFFERY DEWITT CO.

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Largest Exclusive Spark Plug Manufacturers in the World

Any Kind Every Kind Stock, or to Blue Print

Rims

Clincher Q. D. Demountable Channels

For Automobiles, Motor Trucks, Aeroplanes, Motorcycles, Bicycles.

We Also Make Axles and Hubs.

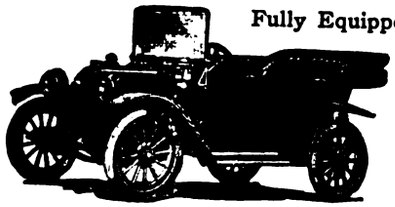
MOTT WHEEL WORKS, Utica, N. Y.

R. B. ABBOTT SALES CO., Sales Agents, Detroit

The Detroiter—$850

Fully Equipped

Five Passenger Touring Car



25 H. P. Long Stroke Motor

Enclosed Valves, Three Point Suspension, Unit Power Plant, Platform Rear Springs, Full Floating Axle, Left Hand Drive, Center Control, Drop Frame, Large Tires, Complete Ball Bearing Car. Write for specifications.

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"Firestone" Tires and Rims

are the least likely to require changing, and afford the best means of tire changing when required.



The Firestone Tire & Rubber Co., Akron, Ohio

and All Principal Cities

Motor Car Manufacturers Since

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HAYNES

1912

Occupying the newest and most modern automobile manufacturing plant in America.

HAYNES AUTOMOBILE COMPANY, Dept. T-8 Kokomo, Ind.

Magneto Money

SAVED BY BUYING NOW

$30.00	for a	**$105.00**	**6** cylinder
$20.00	for a	**$93.00**	**4** cylinder
$18.00	for a	**$65.00**	**2** cylinder
$16.00	for a	**$60.00**	**1** cylinder

Imported U. & H. High Tension Magnetos Less Than Import Cost.

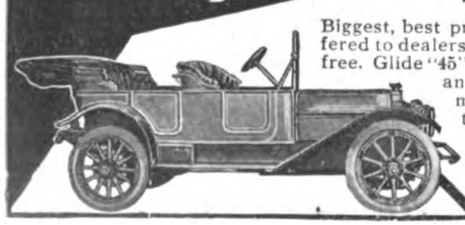
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Glide

Model "45"—$2150

Biggest, best proposition ever offered to dealers. Illustrated book free. Glide "45" in Two, Four, Five and Seven passenger models. Write us today.



The Bartholomew Company

220 Glide St., Peoria, Ill.

The Kentucky Thoroughbred

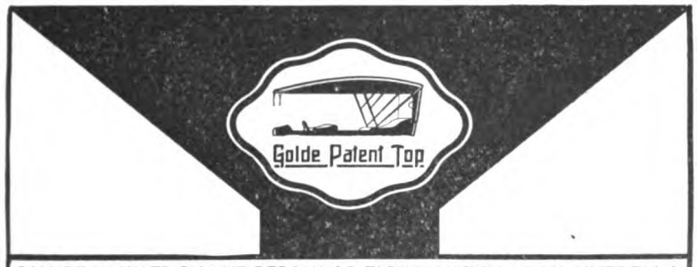
"AMES 45"

Long stroke, powerful Continental Motor—Electric (Dynamo) Lights — Self Starter — Left Hand Drive—Full Equipment—"Amesbuilt" Bodies and Tops. A combination of power, speed, endurance and graceful lines. Price, fully equipped, $1,635. This is 1913's most remarkable car value. Backed by a reputation of 30 years it will win you from the first inspection. We have a most liberal proposition for good, live agents. Send for catalog.

AMES MOTOR CAR COMPANY, Owensboro, Ky.

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CAN BE HANDLED BY ONE PERSON AS EASILY & QUICKLY AS AN UMBRELLA
INSTANTANEOUS PROTECTION
GOLDE-PATENT MANUFACTURING CO. 515 W. 56th ST. NEW YORK.

American
AXLES



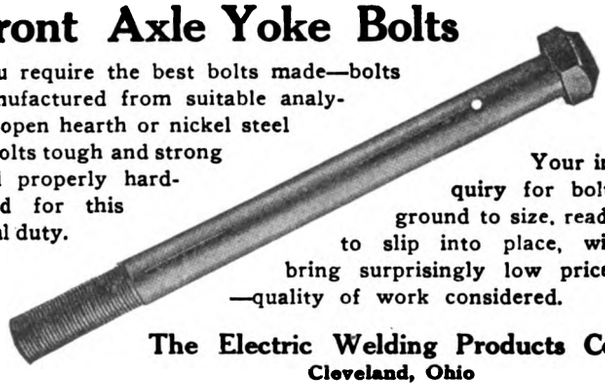
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THE AMERICAN BALL-BEARING COMPANY
Cleveland, Ohio

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THE UNIVERSAL CAR

We have had to double our gigantic output —and the demand is more than doubling. Nearly 180,000 have been sold and delivered. New prices $525 to $800. Dealers everywhere. Ford Motor Company, Detroit, Michigan.

Front Axle Yoke Bolts

You require the best bolts made—bolts manufactured from suitable analysis open hearth or nickel steel —bolts tough and strong and properly hardened for this vital duty.



Your inquiry for bolts ground to size, ready to slip into place, will bring surprisingly low prices —quality of work considered.

The Electric Welding Products Co.
Cleveland, Ohio

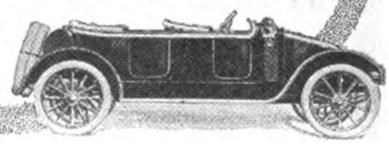
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Built to Last

We are now arranging agencies for 1913.
Write for full particulars
DORRIS MOTOR CAR COMPANY
St. Louis, U. S. A.

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Croxton cars incorporate all of the features for which the buyer looks in the new models. Write for catalog and Agency details.

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Buffalo Electric

Direct Drive—Single Reduction
Foot Control
Irreversible Worm Steer
Long Mileage Batteries
Buffalo Service



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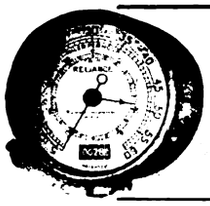
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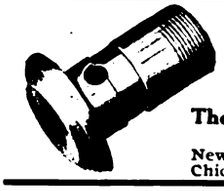


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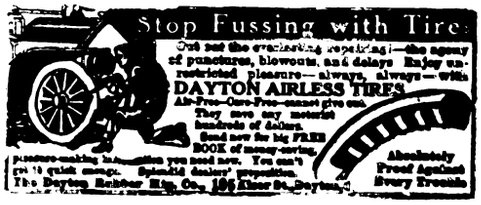
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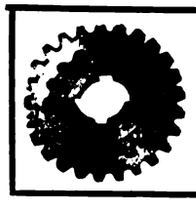


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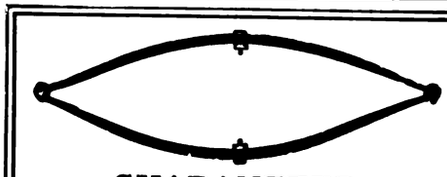
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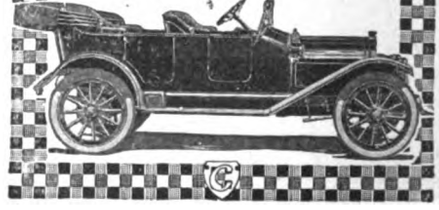
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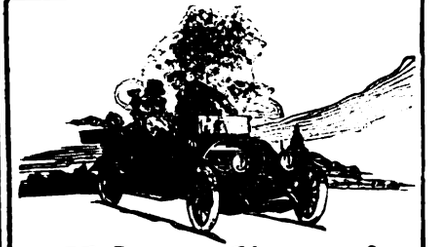
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Nine-tenths of all accidents to automobiles are caused by skidding or slipping.

Either you skid into the "other fellow" or the "other fellow" skids into you.

No matter how careful a driver you may be, you cannot prevent skidding or slipping on wet, muddy snow-covered roads or on icy, slippery greasy pavements unless you equip your car with Weed Chains.

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Bakes either to a high gloss finish, eggshell gloss or dull finish on lamps, radiators and fenders. Will not crack, chip or peel. Ask your garage and supply dealer.
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An oil preparation that softens the leather and pantasote. Makes old tops look like new. Ask your garage and supply dealer for it.
The Columbus Varnish Co., Columbus, O.

LOZIER Type H 4-cylinder touring car. Absolutely new. Demountables. Regular guarantee and equipment. Cost, $5,000. Make cash offer. 1012 N. Grand Ave., St. Louis, Mo.

FOR SALE—One 2-ton Garford truck, with body and top, nearly new, in first class condition. Change of business reason for selling. SPRINGFIELD CREAMERY, Springfield, Mass.

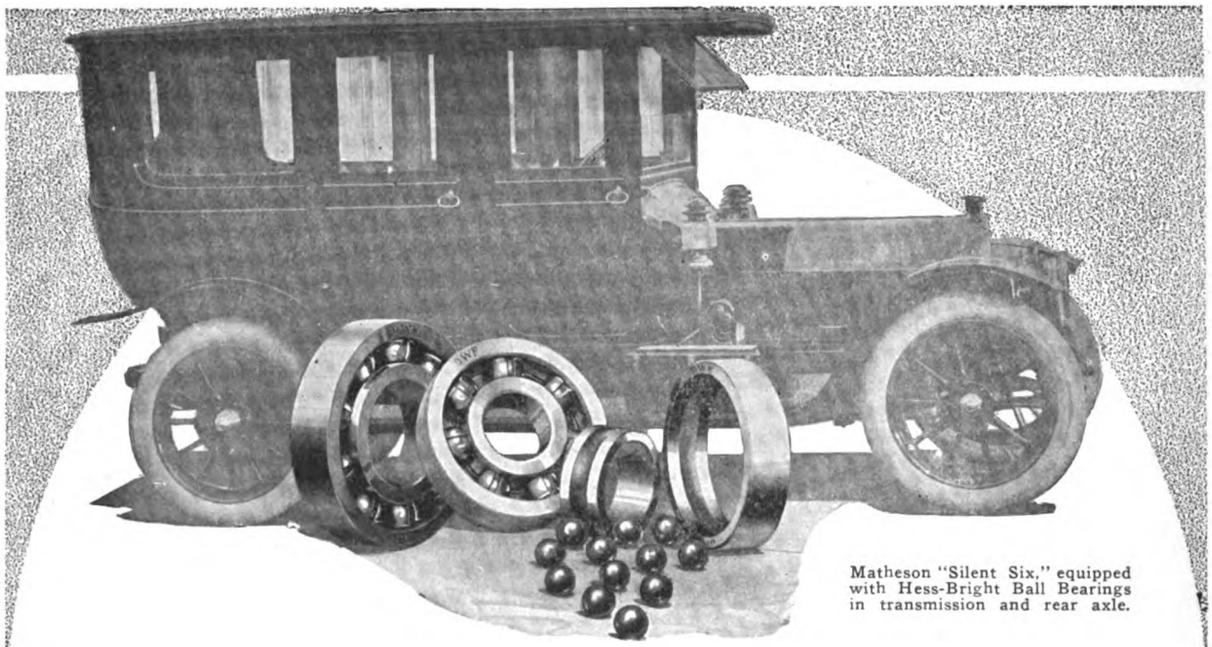
AUTO LISTS, owners, etc., of any State. S. H. CARROLL, JR., Albany, N. Y.

WANTED—Cylinder or chassis of two-cylinder Oldsmobile, Model G. R. H. JAMES. Martinsville, Ohio.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.

An ad. like this will cost you 75c. for each insertion.

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Matheson "Silent Six," equipped with Hess-Bright Ball Bearings in transmission and rear axle.

Grain and Hardness

in Ball Bearings

Homogeneity and uniformity of grain are of particular importance in ball bearings. As the load is carried on points of microscopic area with no cushioning oil film, it follows that extreme hardness is required in both balls and races.

But hardness implies small compressibility. If a ball and its race together compress only four or five ten-thousandths of an inch at their points of contact, it follows that an added compression of two ten-thousandths, due to a soft spot, will appreciably reduce the ball's ability to take its due share of the work.

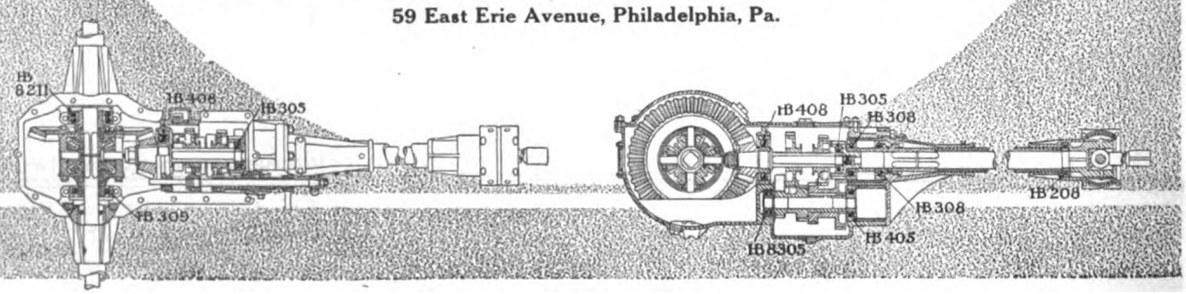
That is the reason why Hess-Bright balls are hardened clear through, not merely case hardened.

Still, there are degrees of density even in balls hardened clear through. A fractured Hess-Bright ball (we fracture them by special apparatus in our laboratory, since they are not breakable by ordinary means) shows a texture finer than the finest china, and perfectly uniform from circumference to center. It is the very perfection of metallurgy applied to the making of steel balls.

And the Hess-Bright races are equally hard and tough, and are hardened clear through like the balls.

THE HESS-BRIGHT MANUFACTURING COMPANY

59 East Erie Avenue, Philadelphia, Pa.



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DEALERS

Be Sure Your Cars Are

EQUIPPED

With

R·I·V Ball Bearings



IMPORTED Since 1904 — *Quality* — R.I.V. CO. 1771 B'way, N. Y.

DEALERS

Bearings of Recognized Worth are Ear Marks of Car Quality

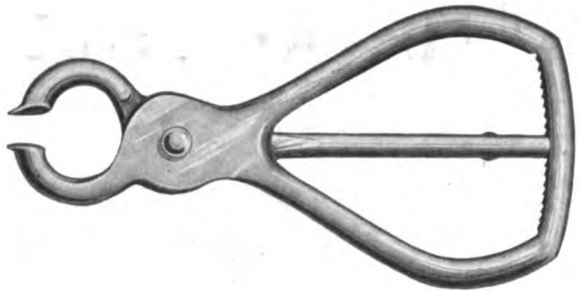
DEALERS

Are the Cars You Represent R.I.V. Equipped?

¶ In the matter of design, materials and construction, R.I.V. bearings stand high in the estimation of the manufacturers of quality cars. Increased demand in the face of the slightly higher cost, is significant. ¶ Here are the reasons: ¶ First, standardized quality and uniformity of material used in the construction of R.I.V. Bearings. Second, accurate manufacturing methods which positively preclude variation in measurement. Third, structural qualifications of the various parts as dictated by R.I.V. design. ¶ These structural advantages include the elimination of excessive side play—the use of machine cut ball retainers and the consequent accuracy of spaces—the greatest possible number of balls in the raceways permitted by our special methods of construction. ¶ That portion of the trade interested in ball bearings will find succeeding advertising of this company to be unusually instructive.

R. I. V. COMPANY
1771 BROADWAY, NEW YORK CITY

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To Car Manufacturers:

When You Deliver a Car as Fully Equipped—Do You Include Gilmer Tire Repair Pliers?

Many of the better manufacturers will include them in 1913, for the really successful builder is not slow to recognize the value of REAL SERVICE to the owner.

Every new model of your make shows new improvements and refinements, but isn't it a fact that your tool kit equipment of today is about the same as you furnished with your first models?

One may expect to receive a tool kit with a lawn mower, sewing machine or bicycle, and while the kit you furnish is undoubtedly adequate to cure most mechanical ailments, you are simply adhering to an ancient custom if you fail to furnish the purchaser of **your** car with reasonable protection against his one large item of expense, TIRES.

A set of Gilmer Tire Repair Pliers included as general equipment means a real saving to the purchaser of your car and will go a long ways to establish the sort of service that future buyers will demand and will receive from the BETTER BUILDERS.

The matter of cost cannot receive serious consideration, as your actual expenditure is measured in CENTS, but the added prestige plus that ONE EXTRA SALES ARGUMENT will produce dollars. May I quote you in quantity?

G. WALKER GILMER, Jr.
52 North Seventh Street **Philadelphia, Pa.**

GILMER TIRE-REPAIR PLIERS
PATENTED TRADE MARK

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Mr. Automobilist:

Your tire maker is very anxious to impress upon you the importance of

Tires Inflated to the Right Pressure

He insists that this is tire economy and

Saves You Money

How do you know what pressure you have in your tires? A

SCHRADER
UNIVERSAL
Tire Pressure Gauge

(Trade Mark Registered in U. S. Patent Office)



(Patented March, 1898—Other Patents Pending)

will tell the exact pressure in your tires at any time, day or night, by simply holding this Gauge to your Valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the Gauge can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the Indicating Sleeve can be pushed back into the Gauge with your finger. No catches or snaps to operate or get out of order. This Gauge is 2½ inches long over all, short enough to apply easily to the smallest diameter of wheel and can easily be carried in the vest pocket or the change pocket of your trousers.

Price $1.00 Each
Ready for Delivery Now

Guaranteed Simple and Absolutely Accurate

Can be obtained from all tire manufacturers and the dealers, or

A. SCHRADER'S SON, Inc.
28-32 Rose Street New York City

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$985

Completely Equipped

Overland

$985

Completely Equipped

High-Priced Feature No. 8

The Overland Model 69-T possesses greater horsepower, greater speed and quieter action than any other car you can buy less than $1200.

It has a big 30 horsepower engine with a 4 x 4½ bore and stroke.

This motor is built with the utmost care; parts are ground to the 1-1000th of an inch. Those which are off-size are immediately rejected by the machinists. Each gear, each cylinder, each camshaft, every part of the 69-T motor is tested with a "go or not go" gauge.

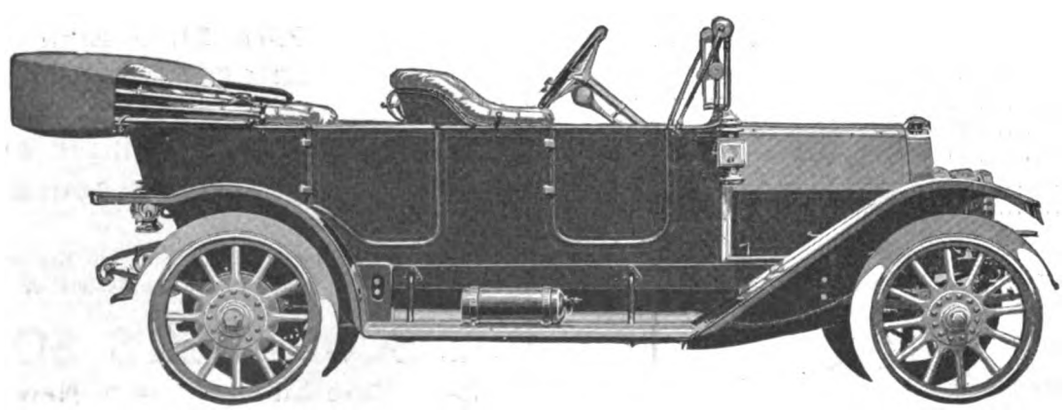
The design and size of the nickel and carbon steel Overland valves force the motor to develop 15 per cent more horsepower than any other motor of similar size.

Here are other high priced features of the Model 69-T motor: three point suspension, one-piece, five bearing crankshaft (only car of its class possessing such), diagonally cut timing gears for silence, water-jacketed cylinders cast singly, and 100 per cent efficient Thermo-Syphon cooling system.

Arrange for an immediate inspection at the local dealer's. He will point out dozens of other features you can not get elsewhere less than $1200.

A post card will bring a catalogue. Please address Dept. 50.

The Willys-Overland Company
Toledo, Ohio



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MOTOR WORLD

Vol. XXXIII New York, U. S. A., Thursday, December 19, 1912 No. 13

WESTERN ELECTRIC TAKES UP AUTOMOBILE APPARATUS

Giant Corporation Forms Alliance With Pittsfield Company—Will Market Latter's Productions and Add to Number.

One of the most unexpected transactions of the season, of which only small rumors had been permitted to escape, just has been consummated between the giant Western Electric Co., of New York, and the Pittsfield Spark Coil Co., of Dalton, Mass., whereby the former will take over the sale of the Pittsfield productions, although for a limited period the Pittsfield company will sell its magnetos direct to the trade. In due course, the magnetos also will be marketed by the Western Electric Co., which, on January 1st, will inaugurate a widespread campaign for the sale of the "Western Electric-Pittsfield" coils, spark plugs, timers and switches, as the goods hereafter will be styled. It also is understood that there very shortly will be forthcoming a combined lighting and starting system.

The personnel of both companies will remain unchanged, but the Pittsfield scope will be very considerably increased. In addition to the present line, and apart from the starting and lighting system, there will be added to the Pittsfield output a fixed spark magneto for use on trucks and small cars, several new types of spark coils and a number of new Jewel spark plugs. Up to the present time, the latter have been made only with mica insulation, but henceforth a choice of mica, porcelain or a combination of porcelain and mica plugs will be offered.

The Western Electric Co. maintains 28 distributing houses, in each of which large stocks of the Western Electric-Pittsfield productions will be carried at all times.

While two others of the gigantic electrical companies have produced either electric motors or magnetos for the automobile trade, the Western Electric Co., whose business amounts to $70,000,000 a year, is the first to take up all of the several branches of electrical apparatus designed for automobile use.

Lasher Incorporates $750,000 Company.

W. B. Lasher, who owns the Weed Chain Tire Grip Co., this week incorporated the American Chain Co. of Sherrill, N. Y., which he formed last summer when he took over the chain business of the Oneida Community. The incorporation of the company, with an authorized capital of $750,000, is largely a legal formality, the ownership still reposing with Lasher, as is the case with the Weed company, a part of whose chains are made under contract at the Sherrill factory, which for some 40 years has produced hardware specialties and chains of many sorts. It is possible that the scope of the American Chain Co. ultimately may be greatly enlarged in respect to tire chains, the enlargement, however, depending on certain negotiations which now are in progress.

Hardie Buys Into the Miller Car.

James M. Hardie, the Chicago sales representative of the Miller Motor Car Co., of Detroit, has acquired an interest in the company and becomes its secretary, treasurer and general manager. C. E. Green remains president and Enos McMillan vice-president. The company will continue to manufacture the Miller "30" and is maturing plans for a greatly increased output.

Willys and Chapin Succeed Briscoe.

Benjamin Briscoe, former president of the United States Motor Co., who was a director and also secretary of the Automobile Board of Trade and who is now in Europe, has resigned those offices. The vacancies have been filled by the election of John N. Willys, of the Willys-Overland Co., as a director, and Roy D. Chapin, of the Hudson Motor Car Co., as secretary.

GERMAN DAIMLER COMES TO AID OF OWNERS IN AMERICA

Enjoins Its American Manufacturing Licensee from Exacting Fees from Owners of Imported Mercedes —Case May be Settled.

Although the Daimler Mfg. Co., which has the exclusive right to manufacture Mercedes cars in the United States, caused some stir about two months ago, when it published advertisements and mailed letters to owners of those cars purchased in Germany and brought into this country notifying them to step up and pay a license fee within seven days, or stand suit, the licensing business has been given a setback in the Supreme Court for New York county, which has granted the Daimler Motoren Gesellschaft, the parent German company, a preliminary injunction restraining the Daimler Mfg. Co. from interfering with Mercedes owners in America.

While the injunction is holding only pending the argument on a show cause order, it is said that negotiations have been opened and the matter never may be fought out in open court. The foundation for the unexpected action of the German company comprises two contracts, one entered into in July, 1910, whereby the Daimler Motoren Gesellschaft, of Unterturkheim, Germany, licensed the Daimler Mfg. Co. to make the Mercedes cars in the United States, and the other, executed at the same time, giving to the Daimler Mfg. Co., or to "such other company as should be formed for that purpose," the exclusive right to import Mercedes cars into the United States.

The application for the injunction is based upon a clause in the import contract which specifies that owners who make bona fide purchases of Mercedes cars are not to be molested within the territory allotted to the importing company, which territory is the United States. The "such company as

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may be organized" is the Daimler Import Co., which recently became involved in bankruptcy proceedings and in which it is said a settlement with creditors probably will be made.

Following the bankruptcy of the Daimler Import Co. the manufacturing company announced broadcast its intention of collecting license fees from Mercedes owners. The range of fees, including those asked and accepted or offered to be accepted, are said to have ranged from $150 to $1,500. These notices sent a storm of Mercedes owners to the attorneys for the German company and resulted in the court proceedings.

The license fee proceedings were said to have been directed only at those owners who had bought their cars abroad and brought them to America themselves. In answer to this contention, the German company states that the excepting clause in the importing contract removes owners in the United States from any liability of annoyance and compels the Daimler Mfg. Co., in case it considers that any cars have been brought in by subterfuge or in a roundabout manner, to take this matter up with the Daimler Motoren Gesellschaft and to seek redress from that source.

Warner-Stewart Case to Be Retried.

After having once tried their case in the United States District Court for the Southern District of New York, the Warner Instrument Co., of Beloit, Wis., and the New York corporation of the Stewart & Clark Mfg. Co., which are involved in patent litigation, are about to retry the issue. This has been made necessary by the serious illness of Judge Platt, who heard the case in April last and whose illness makes it impossible for him to render a decision. The case was on the equity calendar last week but was so near the end that it was made first for trial at the January term.

The Warner company is the complainant, and alleges that the Stewart & Clark company has infringed patent No. 823,237, granted June 12, 1906, to Arthur P. and Charles H. Warner, and under which Warner speedometers are made. Particular emphasis in the pleadings is laid upon that part of the patent which covers a device for regulating the electrical effect in varying atmospheric temperatures. The citing of many foreign patents by the defense was followed by the taking of extensive testimony abroad last winter.

Two Co-related Companies to Dissolve.

The Manhattan Top & Body Co. and the Manhattan Wheel Works, both of 221 West 64th street, New York City, and which are co-related, are preparing to dissolve. A formal meeting for the purpose will be held on January 7th next.

$30,000,000 BUSINESS DONE BY GOODYEAR IN PAST YEAR

Sales of Preceding Twelve Months More Than Doubled—Net Income $3,000,000—Assets Exceed $13,-000,000—Financial Statement.

According to its annual statement, made public last week, the gross sales of the Goodyear Tire & Rubber Co. of Akron, O., during the fiscal year ending October 31st last, amounted to approximately $30,000,000, as compared with $13,262,265 last year, $9,-560,144 in 1910 and $4,277,067 in 1909. The net income totaled $3,001,294. After allowing for the preferred dividend and other deductions, there remained a net surplus of $1,856,888, or 36 per cent. on the outstanding common stock.

The balance sheet shows cash of $1,268,-539 on hand as of October 31, and current assets (including inventory of $4,398,384), aggregating $8,884,882. Current liabilities were $1,116,406, subject to a contingent liability of $1,626,594 for notes receivable discounted, and the guarantee of a $300,000 loan made to the Goodyear Tire & Rubber Co. of Canada by Canadian bankers.

During the year the authorized capital stock was increased from $6,000,000 to $15,-000,000, the new total consisting of $5,000,-000 7 per cent. cumulative preferred and $10,000,000 common. All the preferred is outstanding, but only $5,026,700 of the junior shares.

During the twelve-month there was paid a common stock dividend of $2,289,100; also a 7 per cent. cash dividend ($139,604) on the preferred.

The general balance sheet as of October 31, 1912, in which, as will be noted, the item of Patents, Goodwill, etc., is carried at the purely nominal sum of $1, is as follows:

ASSETS.

Plant	$3,855,569
Patents, trademarks, etc	1
Securities owned	490,075
Notes reserved from employes secured by stock	212,589
Inventory and current assets	8,884,883
Suspended assets	195,564
Prepaid interest, rentals, etc	179,533
Total	$13,818,214

LIABILITIES.

Common stock	$5,026,700
Preferred stock	5,000,000
Current liabilities	1,116,407
Reserves	818,219
Surplus	1,856,888
Total	$13,818,214

Lion to be Disposed of at Auction.

The machinery, tools, patterns and other personal property of the bankrupt Lion Motor Co., of Adrian, Mich., will be sold by the receiver to-morrow, 20th inst. The early sale of the assets was rendered possible by the action of the Lion company in permitting itself to be adjudged a voluntary bankrupt, which action prevented the delay which would have resulted had the creditors, who had previously filed an involuntary petition in bankruptcy, pressed their case.

Raymond to Make a $445 Touring Car.

The production of a 22-horsepower, four-cylinder touring car at the startlingly low price of $445 is the purpose of the Raymond Engine Co., which, organized in August, 1911, only recently matured its plans and acquired a factory in Hudson, Mass. The plant is a two-story brick building, 140 x 80 feet, which has a capacity of 20 cars per day, but it is not the intention of the company to "crowd things," and its output for the 1913 season may not exceed 1,000 cars.

The car, as stated, will mount a four-cylinder, 22-horsepower engine. It will have a wheelbase of 100 inches, wheels 30 x 3 inches, and will employ a special transmission in which some original ideas are incorporated.

The company is capitalized at $150,000, under the laws of Massachusetts. Its officers are: Arthur B. Raymond, president; J. A. Haley, treasurer and manager; C. E. Clement, assistant manager; E. V. Henderson and Joseph L. Donovan, directors.

One Ever Ready to Change its Name.

Just as the case was about to go to trial last week, the Ever Ready Electrical Co., which had been sued for infringing on the title of the American Ever Ready Co., deemed it wise to enter into an agreement to drop the Ever Ready part of its title and find something "just as good." As a result the proceedings in the New York court were discontinued. The American Ever Ready Co., which makes automobile accessories and electrical specialties, was originally incorporated in 1897. The Ever Ready Electrical Co. was formed during May of the present year, and the similarity of names and productions naturally led to considerable confusion. The Ever Ready Electrical Co. is composed of Samuel Halpe, Adolph Cohen and Morris Janigar, who also were named as defendants in the suit.

New Departure Secures Whitlock Plant.

Negotiations of the New Departure Mfg. Co., of Bristol, Conn., for the plant of the Whitlock Coil Pipe Co., in Hartford, practically were completed yesterday, when the stockholders of the Whitlock company empowered the directors to make the sale. Final details will be completed within a few days. It is the intention of the New Departure company to use the Whitlock plant for the manufacture of ball bearings.

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INSIDE SYNDICATE ADVANCED INTERNATIONAL MOTOR LOAN

Million and a Half Not from Morgan Bankers—Lenders Acquire 55 Per Cent. of Stock—Company's Conditions.

It is not a "syndicate of Morgan bankers," as first reports made appear, but a syndicate made up of "certain stockholders" of the company itself who have come to the rescue of the International Motor Co., of New York, and acquired control by advancing the sum of $1,500,000.

It is not denied that there was pressing necessity for the loan. An official communication to the stockholders admits it and remarks that the only compensation, except 6 per cent. interest, which will be obtained by the "inside syndicate" is represented by the trifling amount of 55 per cent. of the common stock, which carries with it control of the company. Each member of the "syndicate" will contribute the same percentage of his own holdings in common stock, and the company itself will add about 750 shares which it owns. The outside stockholders are expected to contribute sufficient to make up the 55 per cent., the "syndicate" generously permitting all of the other stockholders to participate in the loan if they so desire.

The conditions of the loan stipulate that no dividends on the preferred stock shall be paid for a period of two years, except that any dividends which may be earned and properly declared within that period may be paid in scrip subsequently exchangeable for preferred stock.

The condition of the International company, as disclosed to the stockholders, shows that there are banking loans maturing in December, January and February which aggregate $1,325,000, of which $400,000 is secured by bills receivable. There are also outstanding discounted notes, which fall due during December, January, February and March, to the amount of $527,500. The $1,500,000 loan will enable the company to purchase all of the notes and about one-third of the unsecured bank loan, and to continue all such notes and loans, amounting to about $900,000, at 6 per cent., as outstanding obligations of the company. This will leave approximately $600,000 in cash for working capital, which it is believed will prove sufficient to save the situation.

The financial stringency of the International Motor Co., which about two years ago took over the Saurer, Mack and Hewitt trucks, is due, according to President Coleman, "not to lack of business or of profits but wholly because the company had outgrown its available cash resources."

Appeal in U. S. Motor Case Delayed.

Efforts of minority stockholders in the Columbia Motor Car Co. to intervene in the receivership proceedings and prevent the sale of the United States Motor Co., on January 8, were not productive of definite results when their appeal in the United States Circuit Court of Appeals in New York City Monday last, 16th inst., was the subject of two motions, neither of which was granted. The appeal is from an order of the District Court denying the minority stockholders the right to intervene.

On Monday the minority's attorney moved that the appeal be so placed on the calendar that it could be argued before the date fixed for the sale, but this the court denied. The receivers' attorney then moved that the appeal be dismissed on the grounds that the matter is not appealable, but this the court also declined to do, saying it would hear the latter motion when the appeal is reached, which will not be until some time after January 1 and probably not until after the date of sale. The Columbia minority's attorney, however, stated that even if the sale were made before the appeal is reached it would not affect the rights of his clients inasmuch as the appeal is on the calendar of the higher court, which has the power to overrule the lower tribunal, if necessary.

Motsinger Adds Radical Carburetter.

The Motsinger Device Mfg. Co., of Lafayette, Ind., which heretofore has devoted itself to the production of ignition apparatus, quietly has been developing a carburetter which will be added to its manufactures. While admitting that it is radical in many respects, because of patent requirements, the Motsinger people will give little information concerning the new device. They declare, however, that it is their present intention to sell it with a guarantee that it will give more mileage per gallon than any carburetter made in the country.

Dealers Agree to Pay for Demonstrator.

William M. Redfield and Maurice Levi, who at one time traded in Imperial cars in New York City under the style Redfield & Levi, consented that judgment be taken this week in the Supreme Court for New York county in an action brought by the Imperial Automobile Co., of Port Huron, Mich., to recover the value of a demonstrating car; the judgment allowed was for $1,100, $700 less than was asked in the Imperial company's complaint. The claim was that the demonstrator, which was shipped from Port Huron in October, 1911, was not paid for, although it had been sold by the dealers.

GROSSMAN AND EAGLE AIR THEIR TROUBLES IN COURT

New York Concern Demands $30,000 as Aftermath of Windshield Contract—Enumerates Ten Different Grievances.

Some of the reasons, not heretofore made public, why the Emil Grossman Co., of New York City, and the Eagle Co., of Newark, N. J., a subsidiary of the Standard Co., of Torrington, Conn., parted company about a year ago are made plain in the formal complaint which, after about two months' delay, has been filed in the United States District Court for the Southern District of New York in an action for nearly $30,000 brought by the Grossman company against the Eagle concern. The complaint is made up of ten separate causes of action, all growing out of a contract entered into by the Grossman and Standard companies, whereby the latter was to manufacture windshields for the New York concern.

The contract was signed January 31, 1910, and required that the Standard Co. manufacture windshields exclusively for Grossman and that during the term of the contract, which was to run from May 1, 1910, to May 1, 1911, Grossman was to have windshields manufactured by no other company; the agreement specified exclusiveness on both sides. Prices for certain types were named in the contract, and these figures were made contingent upon certain limits of variation in the price of materials. The two types which enter largely into the litigation are those known as the Hydraulic and the Springaction.

After the execution of the contract the Eagle Co., the Standard subsidiary, took it over by oral agreement, the complaint alleges. Having repeated the contract and various other essential but cumbersome legal terms, the Grossman company enumerates its causes for complaint.

It alleges that before September 15, 1910, the agreement was so altered that the Eagle Co. was to ship direct to Grossman's customers, was to collect the bills and was to remit to the Grossman house the difference between the cost and selling price. On this score, for unremitted profits, there is a claim for $15,000. Also, Grossman claims $359.80 due on discounts of 5 per cent. for cash.

The third cause states that for bills paid by the 15th of the month following the month of shipment there was to be a discount of 2 per cent., and this is figured out as giving a claim of $336.70. On bills discounted by the Grossman customers between October 1, 1910, and April 1, 1911, on

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a 2 per cent. basis, there is set up another claim for $459.50.

In the contract, it is stated, it was specified that if reductions in price were to be made to anyone the Grossman company was to have advantage of such lesser rates, but the allegation is made that the Eagle company sold to others than Grossman and at a lower rate than that allowed to the latter, which forms the basis for an overcharge claim of $672.75. In this connection there appears a similar item of $50.

Arriving at the fifth cause, Grossman tells of the sale and delivery to the Eagle Co. of windshield demonstrating stands to the value of $1,588.40, on which, it is alleged, but $1,409.80 was paid, leaving a balance of $178.60.

January 25, 1911, a new agreement appears to have been made whereby the Grossman Co. was to be entitled to a commission of 7½ per cent. on all goods manufactured by the defendant and sold at distributers' or manufacturers' prices. This agreement, between February 1 and July 1, 1911, serves to produce a claim for $699.90.

The Eagle Co.'s exhibit at the 1911 automobile show in Madison Square Garden figures in the seventh cause of action; the Grossman company claims that the Eagle company agreed to pay one-third the rental price of the Grossman space for being permitted to exhibit therein and this amount—$126—is claimed to be unpaid.

The court may have some difficulty if called upon to decide the eighth cause. This states that the Eagle Co. so conducted its business that quite a number of orders from Grossman customers were not received until after the contract expired, and that this is easily worth $5,000.

Adding one more item, the Grossman company charges the Eagle company with having accumulated a greater stock of windshields than was necessary, with the result that the manufacturing concern became panic-stricken and sold large quantities at a heavy sacrifice, causing Grossman to lose an average of $1.50 per shield. This totals $7,500.

The tenth and last grievance is that the Eagle Co. shipped defective goods to the Pacific Sales Corporation of San Francisco and that because of their condition the Grossman company, after consulting counsel, took back the goods and settled the San Francisco company's claim. The windshields afterwards were sold, but the transaction is used as the basis for a claim of $1,583.54.

The whole reaches the figure of $31,936.79, but credits allowed reduce this by $2,630.43, leaving the actual amount of the judgment demanded $29,306.36. No answer has been filed, but a firm of attorneys has entered an appearance for the purpose of having the bill of complaint dismissed on the grounds of lack of jurisdiction; the law firm does not appear for any other purpose. The alleged lack of jurisdiction may arise from the fact that the Eagle Co. is located in New Jersey and is a corporation of that State.

Gray & Davis Acquire Ingenious Gear.

Gray & Davis, Inc., of Boston, Mass., have acquired from the Gray Engine Starter Co., of Indianapolis, Ind., the rights to an ingenious internal gear which the well-known Bostonians believe is particularly adapted to their electric starting motor and which, they intimate, will cause the industry to sit up and take notice when it makes its appearance in their device for the 1914 season.

The gear is the invention of Thomas J. Gray, of Broad Ripple, Ind., and patents on it are about to issue. Gray & Davis frankly admit that they themselves were working on something of the sort when they discovered the Gray invention, which they found to be so entirely new and so much better than their own that they made haste to become possessed of it. Gray & Davis have not yet actually commenced to make the gear and, as stated, it will not be incorporated in their starting motors until late next year or in 1914.

The Gray Engine Starter Co. itself was incorporated only last week, under the laws of Indiana, with an authorized capital of $300,000. In addition to the inventor, Thos. J. Gray, the directors are Dr. Robert C. Light, Henry M. Spaan, William Bosson, Henry Rosenberg, Mason B. Light and Robert W. Bosson.

Favery Tire Locates in Middletown.

Incorporated three years ago, and having perfected its unusual cushion tire meanwhile, the Favery Tire Co., of New York City, finally has acquired a plant in Middletown, N. Y., and has its plans so well advanced that tires will be coming through the factory about January 1st. The company is composed of Ethelbert Favery, the inventor; H. C. Cryder and M. W. Brashears. The tire, which already has been considerably exploited, comprises a concentric series of endless bands of specially woven fabric and rubber supported, so that they will not touch each other on the wheel rim, by aluminum blocks quite closely spaced.

Weed Fails to Hasten Suit.

Efforts of the Weed Chain Tire Grip Co. to hasten proceedings in the United States Circuit Court of Appeals in New York City, where the E. J. Willis Co. is appealing from an injunction granted to the Weed company, were blocked last week when the court declined to permit the appeal to be accelerated, and it now cannot be reached for a year.

Had the printed appeal been filed before the present calendar was made up the case could have been tried this winter, but since the appeal was not filed by October 1 it cannot now find place on a calendar until next October. The Weed motion was to have the appeal filed and the case placed on the present calendar, but the court ruled that if an exception were made and rules brushed aside in this case there would be a deluge of such requests. The Willis company sold the Whittaker tire chains, which are claimed to infringe the Parsons patent, No. 723,299.

Light and Telephone Bills Unpaid.

Claiming a bill for electric current supplied to the Mid-Town Auto Storage Co., of 245 West 12th street, New York City, the New York Edison Co. last week filed judgment in the New York county clerk's office; the amount is $208.45. Failure to pay a telephone rental bill amounting to $105.87 also was the cause of a judgment rendered against the Ditmar Auto Sales Co. in favor of the New York Telephone Co. The New York Edison Co. also filed judgment for $19.41 against the Anglo Tire Co.

Endurance Takes Judgment on Tire Bill.

Judgment for $164.55 was filed this week in the New York county clerk's office by the Endurance Tire & Rubber Co. against the Frank Dunham Co., which at one time operated a garage and was dealer in a well known line of cars. The bill represents the unpaid balance of a bill for tires.

American to Manage Belgium Plant.

D. G. Baker, former factory manager of the Olds Motor Works, has engaged with the Carel Freres Co. to serve as director general of its plant in Ghent, Belgium, where Diesel engines in considerable quantities are manufactured. Baker sailed last week to assume his new duties.

Court Orders Sale of Findlay Plant.

The plant of the embarrassed Findlay Motor Car Co., of Findlay, O., which has been idle for many months, has been ordered sold on January 16th next. The Federal court which ordered the sale stipulated that no bids for less than $50,000 will be accepted.

Wisconsin Capital in Michigan Venture.

The Hoff Mfg. Co. has been organized in Detroit and has commenced preliminary work on a light chassis at 268 Jefferson avenue. Wisconsin capital is understood to be back of the venture, in which the active men are the Hoffmeier brothers.

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The Week's Incorporations

Springfield, Mo.—Ozark Motor Co., under Missouri laws; authorized capital, $5,000; to deal in motor cars.

Des Moines, Ia.—Union Motor Car Co., under Iowa laws; authorized capital, $10,000; to deal in motor cars.

Gloucester, Mass.—Twin Light Garage Co., under Massachusetts laws; authorized capital, $10.000; to operate a garage.

Dover, Del.—Hatch Oil Engine Co., under Delaware laws; authorized capital, $500,000; to manufacture oil engines.

Grand Rapids, Mich.—Peninsular Tire & Rubber Co., under Michigan laws; authorized capital, $1,000; to deal in motor car tires.

Annapolis, Md.—Auto Air Appliance Co., under Maryland laws; authorized capital, $200,000; to manufacture motor car devices.

Youngstown, Ohio—Cartercar Sales Co., under Ohio laws; authorized capital, $10,000; to deal in motor cars. Corporators—Wm. Beight and others.

Camden, N. J.—Starr Garage, under New Jersey laws; authorized capital, $50,000; to operate a garage. Corporators—F. L. Starr, H. H. Grace, T. P. Curley.

Milan, Mich.—Gauntlett Auto Sales Co., under Michigan laws; authorized capital, $50,000; to deal in motor cars. Corporators—Elon Gauntlett, C. M. Knowles.

Cedar Rapids, Ia.—Beck Auto Transfer Co., under Iowa laws; authorized capital, $10,000; to operate a motor delivery. Corporators—Martin J. Beck and others.

Jacksonville, Fla.—Atkinson Tire & Supply Co., under Florida laws; authorized capital, $25,000; to deal in motor car suppplies. Corporators—R. L. Atkinson and others.

Indianapolis, Ind.—Tone Car Corporation, under Indiana laws; authorized capital, $200,000; to manufacture motor vehicles. Corporators—Fred I. Tone, Mark H. Miller.

Detroit, Mich.—Detroit Autoheater Co., under Michigan laws; authorized capital, $2,000; to manufacture motor car accessories. Corporators—Oswald Zahn and others.

Boston, Mass.—Motor Supply Shop, Inc., under Massachusetts laws; authorized capital, $25,000; to deal in motor car supplies. Corporators—Walter E. McDaniel and others.

Minneapolis, Minn.—Broadway Garage Co., under Minnesota laws; authorized capital, $4,000; to operate a garage. Corporators—George J. Dahm, J. A. Cramer, and others.

New York, N. Y.—Queensboro Garage, Inc., under New York laws; authorized capital, $10,000; to operate a garage. Corporators—Frank I. Jockers, Augusta Jockers, 110 14th street, Flushing; Daniel J. Stack, College Point.

Chicago, Ill.—A. W. Greiner Auto Sales Co., under Illinois laws; authorized capital, $25,000; to deal in motor cars. Corporators—A. W. Greiner, Michael Feinberg, C. E. Becker.

Buffalo, N. Y.—Velie Motor Sales Co., under New York laws; authorized capital, $20,000; to deal in motor cars. Corporators—Ernest F. Snyder, John J. Finerty, Frank Sherwin.

Buffalo, N. Y.—Glide Sales Co., Inc., under New York laws; authorized capital, $10,000; to deal in motor cars. Corporators—J. Francis Lynch, Louis P. Fuhrmann, Edward T. Danahy.

New York, N. Y.—Blair Motor Truck Co., under New York laws; authorized capital, $5,000; to deal in motor trucks. Corporators—Howard O. Lente, Frank W. Dix, H. Otis Lente, 94 Park Place.

New York, N. Y.—K. & K. Motor Car Co., under New York laws; authorized capital, $10,000; to deal in motor cars. Corporators—Agnes E. Killian, Stapleton, S. I.; Frank B. Killian, Lillian E. Killian, New Dorp, S. I.

New York, N. Y.—Schacht Motor Car Co. of New York, Inc., under New York laws; authorized capital, $60,000; to deal in motor cars. Corporators—Bela Cukor,

WHERE THE CROXTON $3,000 "SIX" WILL BE MANUFACTURED



CROXTON MOTOR CAR CO.'S NEW CONCRETE PLANT, 500 x 120 FEET, IN WASHINGTON, PA.

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Henry V. Radonitz, Clair J. T. Terrill, 1700 Broadway.

New York, N. Y.—Motor Trading Co., under New York laws, authorized capital, $10,000; to deal in motor cars. Corporators—William A. Shepard, 200 Cathedral Parkway; Robert W. Tindall, 346 East 195th street; Albert Donces, 170 West 83rd street.

Glen Cove, N. Y.—Glen Cove Garage, Inc., under New York laws; authorized capital, $1,000; to operate a garage. Corporators—Thomas F. Meade, 683 Lafayette avenue, Brooklyn; Edward Lewis, Lillian Lewis, Flushing.

New York, N. Y.—F. W. Ofeldt & Sons, Inc., under New York laws; authorized capital, $20,000; to deal in motor vehicles. Corporators — Edward Y. Eltonhead, 2508 Broadway; Ernest G. Ofeldt, Frank A. Ofeldt, Nyack, N. Y.

Rochester, N. Y.—Rochester Macandaruba Tire Filler Co., under New York laws; authorized capital, $10,000; to manufacture tire filler. Corporators—Charles S. Morris, Nunda, N. Y.; John S. Crosier and Albert C. Olp, Rochester.

New York, N. Y.—United Rubberine Supply Co., under New York laws; authorized capital, $200,000; to deal in tire fillers. Corporators — Herman Mayer, 331 West 83rd street; Thomas H. Royce, Borough Park; Charles L. Bookheim, Hastings, N.Y.

Brooklyn, N. Y.—Mel Stringer's Garage Corporation, under New York laws; authorized capital, $10,000; to operate a garage. Corporators—Frederick R. Huntington, 20 Broad street, New York City; Mel Stringer and Jas. Culleeny, 342 Flatbush avenue, Brooklyn.

New York, N. Y.—Rolaff Oil Carburetter Co., under New York laws; authorized capital, $25,000; to manufacture carburetters. Corporators—Richard Wolfsky, 312 West 114th street; Joseph W. Stone, North Pelham, N. Y.; William G. Van Vleck, 66 Broadway.

New York, N. Y.—Motor Dealers' Contest Association, Inc., under New York laws; authorized capital, $30,000; to promote motor contests. Corporators—Inglis M. Uppercu, 1819 Broadway; Emanuel Lascaris, 1649 Broadway; James C. Nichols, 1671 Broadway.

Changes of Capitalization.

Springfield, Ohio—Victor Rubber Co. from $69,000 to $150,000.

Washington, Pa.—Croxton Motor Car Co. from $300,000 to $400,000.

Clintonville, Wis.—Four Wheel Drive Auto Co. from $110,000 to $250,000.

Cleveland, Ohio—Standard Pump & Engine Co. from $25,000 to $100,000.

PROMINENT MEN IN TRADE WHO ASSUME NEW DUTIES

Resignations and Promotions That Serve To Place Many Workers In New Places—Few Leave the Industry.

L. B. Johns has been appointed New England manager of the General Motors Truck Co. He will make his headquarters in Boston.

B. C. Spitzley and W. T. Bush, respectively assistant general manager and sales manager of the Abbott Motor Co. of Detroit, have resigned those offices.

John R. Thomas has been promoted to the management of the Philadelphia branch of the United Motor Co. Previously he managed the branch in Washington, D. C.

R. E. Paris, until recently sales manager of the Olds Motor Works, has joined the Reo Motor Truck Co. of Lansing, Mich. He will have to do with the sales department.

B. D. Arthur, formerly Western sales manager for the Ohio Motor Car Co. of Cincinnati, O., has been elected vice-president of the Croxton Motor Car Co. of Washington, Pa.

George T. Howard has been appointed manager of the Goodyear branch in Washington, D. C. He succeeds Wade Powers, who was promoted to the management of the Philadelphia branch.

R. O. Gresham has been promoted to the post of sales manager of the Warren Motor Car Co., of Detroit. Previously he was the company's superintendent of agencies for the South and Middle West.

John H. Mowe, manager of the Firestone branch in Detroit, has resigned that office to join the Goodyear Tire & Rubber Co. He will take up his new duties about January 1st. Mowe has been succeeded by H. A. Coffin, formerly with the Warren Motor Car Co.

Orin S. Wilson, former manager of the Studebaker branches in Denver and Des Moines and a veteran in the Studebaker service, has been transferred to the eastern half of the country, where he will act as direct representative in the East and South. He will make his headquarters in New York City.

Charles S. Shuman has been appointed sales manager of the Automobile Supply Mfg. Co. of Brooklyn, N. Y., which makes the Newtone electric and bulb horns. At one time, Shuman was connected with the Lovell-McConnell Mfg. Co., but more recently has been serving with the Burn-Boston Battery & Mfg. Co.

On January 1st next, Peyton R. Janney will become general manager of the R-C-H Corporation in Detroit, succeeding J. F. Hartz, who has been treasurer and acting general manager for the past two months and who will retain the office of treasurer. Janney is at present manager of the Peninsular Motor Co., which makes the Marquette car in Saginaw, Mich.

W. J. Leisaw, who for many years traveled Michigan in the interests of the Buick Motor Co., has resigned that connection to become district sales manager of the Abbott Motor Co. for the states of Michigan, Ohio and Indiana. R. S. Bowman, formerly an Imperial representative in the South, also has become an Abbott-Detroit district sales manager. He will cover the States of Iowa, Nebraska and Western Illinois.

John A. Graham, of Boston, has been engaged as general manager for the recently organized Maritime Motor Car Co., Ltd., of St. John, N. B., whose factory near Holbrook, two miles from St. John, is nearing completion. Graham at various times has been connected with the Packard, Brightwood and Westfield companies. The Maritime company will produce a 40-horsepower six-cylinder car which will list at about $3,000.

H. G. Deupree, for two years assistant sales and advertising manager of the Remy Electric Co. of Anderson, Ind., has resigned to become vice-president of the Sourbier-Emrick Realty Co. of Indianapolis. Edward G. Sourbier, the president of the company, was the founder of the Marion Motor Car Co., and only several months since disposed of his holdings in the Ideal Motor Car Co., of Indianapolis, which he helped to organize.

Minor Business Troubles.

Engene Vatet has been appointed receiver for the Dolson Co., of Munice, Ind.; the company operated a garage and automobile supply station.

The George F. Wallin Co., dealer in accessories at 226 West 58th street, New York City, which recently assigned for the benefit of its creditors, has filed schedules; they show liabilities of $6,587, nominal assets of $5,633 and actual assets of $5,131.

Wheel Inventor Purchases a Factory.

John W. Wilson and Philip C. Smith have purchased a former creamery building in Lawrenceburg, Ind., which will be converted into a modern plant for the manufacture of automobile wheels. Wilson is the inventor of a wheel on which a patent is pending, and when issued the wheel will be produced in the Lawrenceburg factory.

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In the RETAIL WORLD

Bruce Champion has opened a garage in Osage, Ia.

Kail & Larson have opened a garage in Lohrville, Ia.

George Fisher is having a garage built in Newberry, Pa.

C. O. Kittleson is building a garage in Forest City, Ia.

Joseph Piper is about to open a garage in Shenandoah, Ia.

The O'Harrow Auto Co. is having a new garage erected in Charles City, Ia.

John W. Bowser is building a garage in Seabright, N. J.

Christopher Brisen has opened a garage in San Juan, Cal.

Guy R. Kennedy is building a new garage in Chico, Cal.

Cyrus Everett is making ready to build a garage in Sydney, O.

The Orono (Me.) Motor Co. has opened a garage on Pine street.

E. M. Atwell is about to establish a garage and agency in Gaines, Pa.

Charles J. Moody has established a garage on River street, Elgin, Ill.

H. M. Penn is making ready to enter the garage trade in Madison, S. D.

The Ryan Garage in Montevideo, Minn., has been bought by J. C. Flinn.

J. B. Roach is about to open a garage and machine shop in Van Buren, Ark.

Charles Winters and Walter M. Merle have opened a garage in Garwin, Ia.

Joseph Schmidt of Delleplaine, Ia., is about to build a garage, 60 x 25 feet.

Henry and Hugo Abramson purpose building a garage in Oakland, Cal.

The Coleman-Blank Co., of Albuquerque, N. M., is erecting a garage on 6th street.

John Fowler is building a garage on Lake avenue, St. Louis, Mo. The cost is $9,200.

Frank Cook has taken over the McCue & Beecroft Co.'s garage in Lakewood, N. J.

Paul McAinich has entered the trade in Sedalia, Mo. He has the Overland agency.

S. J. Snittjer has had plans prepared for a garage and salesrooms in Grundy Center, Ia.

A garage is being erected in Springfield, Tenn., for Dolan & Lewis; it will cost $8,000.

Klassen Bros., in McPherson, Kan., have fitted up a former Methodist church as a garage.

Robert Molke of Brooklyn, N. Y., is having a garage erected on Johnson street; the cost is $7,000.

Dayre Courtney has entered the garage trade in New London, Ia. He will also sell cars and supplies.

The Co-operative Motors Co. plans to erect a garage in Long Beach, Cal., at 115 American avenue.

C. C. and J. C. Dorman are principals in a new dealership business at 508 Washington street, Gary, Ind.

Morris H. Wilcher has established a garage in Rock Island, Ill. It is located at 1516 Fourth avenue.

Carson & Granger, of San Jose, Cal., have erected a new garage; they also have taken the Haynes agency.

William Michaelson of San Francisco, Cal., has purchased an interest in the garage business of Joseph Zillianit.

A. Parker, of Baltimore, Md., has let the contract for a garage to be erected at 1018 Morton street; it will cost $1,200.

Jerry Coughlin & Son is the style under which a new garage firm is about to commence business in Fort Dodge, Ia.

The Worcester (Mass.) Automobile Co. just has completed a garage on Vine street; the company deals in Studebakers.

C. M. Marshall & Co. have had plans prepared for a garage to be erected in Lexington, Ky., at 277 North Upper street.

W. N. Bell, proprietor of the Auto Repair Co., in Chattanooga, Tenn., has taken on cars; he will handle the Marion.

Frank Cliber and Andrew Stone, Jr., have opened a garage in Hollidaysburg, Pa. Central Garage is the style of the business.

Fillow Auto Co. is the name under which a new business has been established in Danbury, Conn. Homer Fillow is president.

Ewald W. Lester is building a garage, 40 x 74 feet, in Waseca, Minn. Lester formerly was in charge of W. J. Priebe's garage.

Fred Conrad and others purpose erecting a garage in Baltimore, Md. The site secured is at 1215 North Carolina avenue.

C. C. Worthington is having a garage built in Stroudsburg, Pa. He also is interested in the Buckwood Inn, in that city.

William S. Kreiger is about to establish a tire and accessory store in St. Louis, Mo. He will locatae at 209 North 12th street.

J. M. McCoach and S. P. Hager have established an agency in Huntington, W. Va. They will handle the Abbott-Detroit.

Charles W. Loos & Sons will open salesrooms on Main street, Coshocton, O. Their line includes Overland, Rambler and Ford cars.

Budy Klinkhammer, formerly of Union Hill, Minn., is preparing to build a concrete garage in Belleplaine, in the same State.

W. H. Thompson, of Canaan, Conn., has become a dealer; he has the Ford representation in Canaan and Norfolk, in the same State.

A. D. Woodke of Storm Lake, Ia., has purchased the interest of B. G. Gould in Gould & Woodke; the firm conducts an agency.

A garage firm, in which Warren S. Lee is a principal, has been formed in Altoona, Pa. A garage will be constructed on Green avenue.

Thomas Scheutz of Quanah, Tex., has leased the building occupied by the Panhandle Garage & Sales Co. He will operate a garage.

Thomas Hughes, of Lansdowne, Pa., has leased a building at 18 Crosby street and will remodel it as a garage; he has the Ford agency.

S. E. Vanderveen and Henry Moser have established a garage in Grand Rapids, Mich., at 415 Lafayette avenue; Hill Garage is the style.

W. H. Tyler, Eli E. Tyler and Henry H. Kober have formed a partnership in Pueblo, Col. They propose to do a general automobile business.

The Elyria (O.) Auto Sales Co. is building new quarters on East Broad street; they will include a repair shop, storage rooms and salesrooms.

George O. Jameson, formerly manager of the Interstate Auto & Supply Co., of Des Moines, Ia., has purchased the accessory business of that company; he has transferred it to the Capital City Commercial College Building.

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The C. B. Johnston Co. has been formed in Boston, Mass., and will open up in the Motor Mart as dealer in Stewart trucks and Pullman and Ames cars. The officers are: President, H. A. Geuineau; treasurer, C. B. Johnston; secretary, A. M. Johnston.

Wayne P. Zent, who held a controlling interest in the Sterling Garage, Schenectady, N. Y., has sold his interest in that business and will establish a garage and salesroom under his own name at 16 South College street; he will handle the underslung American and the Flanders "six."

T. Jay Holdridge, of the Kansas Flour Mills Co., of Wichita, Kan., has embarked in the automobile business; he has purchased the Cadillac agency in Wichita, which handles fourteen counties. The sale was made by George W. Denton and Chas. H. Smyth, who had owned the agency since its former owner, Bert Richards, died several months ago.

Following the entry of Charles F. Miller into the V. R. Hall Automobile Co., of Cleveland, O., the name has been changed to the Hall-Miller Automobile Co. The company will continue to handle Cartercars and Hatfield trucks; Miller, who formerly was secretary of the Cleveland Grays, will attend to affairs in Cleveland, while Hall will circulate in the territory which the company controls.

The Roberts-Sherburne Co., which recently was formed in Boston to handle American cars, and a company headed by Frank F. Wentworth, dealer in Marion cars in that city, have given way to a consolidation of interests which is styled American-Marion Boston Co. The Roberts-Sherburne Co., which was located on Copley Square, will be dissolved and the new business will be carried on in Wentworth's location at 1002 Commonwealth avenue. Wentworth will act as president of the new company and Frank L. Roberts, of the Roberts-Sherburne, also will hold office. J. I. Handley, head of the American and Marion manufacturing companies, will be a director.

Recent Losses by Fire.

Louisville, Ga.—E. H. Rhodes, garage destroyed. Loss $4,000.

Westfield, Mass.—Elm Street Garage and 25 cars destroyed. Loss, $40,000.

Yarmouth, N. S.—Burrows Garage, Central street, destroyed. Loss not given.

Shreveport, La.—Avery & Spence, 114 Milan street, garage damaged. Loss, $2,000.

Trenton, N. J.—Empire Rubber Co., North Clinton avenue, plant damaged. Loss, $8,000.

Buffalo, N. Y.—Overland Automobile Co., 918-20 Main street, stock damaged. Loss, $20,000. Building loss not given.

NEW YORK DEALER EVOLVES INSTALLMENT SELLING PLAN

Retails Overland Cars for Cash Payment and Six Months of Installments—Ten Per Cent. Added to Latter Amounts.

In selected cases, not a few dealers have sold automobiles on installments, but, so far as known, C. T. Silver, who is practically the C. T. Silver Motor Co., Inc., of New York, is the first to offer automobiles to the general public on the easy payment plan. Silver, who handles the Overland car in New York, Brooklyn, Newark and Asbury Park, has formed the Overland Part Payment Co. to facilitate his operations. It is a co-partnership of two men, of whom Silver is one; the other prefers not to reveal his identity. The Part Payment company has offices in Silver's store at 1601 Broadway.

The system adopted requires the payment in cash of not less than one-half the purchase price of the car selected, 10 per cent. being added to the balance due. For instance, if an Overland delivery wagon, priced at $1,000 f. o. b. Toledo, is chosen, $35 freight charges first are added to the price, making the total cost $1,035. A first payment of $500 reduces the amount to $535, which, plus 10 per cent., makes the total cost to the installment purchaser $1,088.50. The remainder—$588.50—is payable in monthly installments extending over a period of six months.

The only conditions of purchase are the usual ones that obtain in installment sales—i. e., that the buyer maintain insurance upon the car and that title to it remain with the Overland Part Payment Co. until the full purchase price is paid.

Silver naively remarks, however, that there is no rule prohibiting purchasers from paying more than $500 as a first installment, if so inclined. A small saving, of course, results. If, for example, $600 is paid, it would leave a balance of $440—that is, $400 plus 10 per cent., and so on down the financial scale.

Judgment Against Adjuster-Repairman.

The defense of Walter H. Stearns, a former New York City repairman, that not himself but the Walter H. Stearns Co., an incorporation, should have been the defendant in an action brought by the Couple Gear Freight Wheel Co., of Grand Rapids, Mich., apparently availed little, as judgment against him was recorded last week in the Supreme Court for New York county for $397.65, the full amount asked. The Couple Gear's complaint was that more than a year ago, when a Couple Gear truck, owned by the Curtiss-Blaisdell Co., was damaged, Stearns acted as insurance adjuster and then performed the work of repairman, buying parts from the Couple Gear company and also utilizing a factory mechanic. The failure to pay the bill resulted in the suit.

Grabowsky Schedules $759,000 Assets.

Schedules in bankruptcy of the Grabowsky Power Wagon Co., for which a receiver was appointed on November 7th, places its assets at $759,376.48 and the liabilities at $389,758.85.

The chief assets are: Real estate, factory buildings, etc., $168,552.98; cash on hand, $17,324.11; bills, promissory notes and securities, $63,959.12; machinery, tools, etc., $109,273.12; patents, $150,000; other personal property, $122,967.79; debts due on open accounts, $126,011.36; insurance policy, $1,000; unliquidated claims, $238. The debts are made up of: Taxes due, $5,492.64; wages, $792.95; unsecured claims, $339,586.97; notes and bills which should be paid by other parties, $43,706.29.

To Produce Wet Batteries in Galena.

Having acquired the necessary financial support, E. E. Winters and J. W. Hake, of Chicago, who have developed a storage battery of considerable merit, have formed the Galena Battery & Vehicle Co., which shortly will commence operations in Galena, Ill. In addition to the inventors, the company is composed of W. H. Harris of Indianapolis and Gus E. Brown of Galena

Thermoid Sues for Unpaid Account.

An alleged unpaid bill of $153 for goods sold and delivered is the cause of an action instituted this week in the Supreme Court for New York county by the Thermoid Rubber Co., of Trenton, N. J., against George H. Sprague, trading as the Sprague Auto Supply Co. He is located in Hewletts, Nassau county, N. Y.

Garage Consents to Oil Bill Judgment.

The action brought in the Cupreme Court for New York county by the Texas Co. against the Mohawk Garage Co., of Brooklyn, N. Y., on a bill for oil, was not tried when it was reached, Tuesday last, 17th inst. When the case was called the Mohawk permitted judgment to be taken in the amount of $778.61.

Streator Failure Involves Body Builders.

F. F., Al and Oscar Zimmermann, who built automobile bodies at Waupun, Wis., have filed a petition in bankruptcy. They were brought down by the recent failure of the Streator Motor Car Co. of Streator, Ill., for whose Halladay car the Zimmermanns made bodies.

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THE MOTOR WORLD

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A. B. SWETLAND, President and General Manager
F. V. CLARK, Business Manager

EDITORIAL DEPARTMENT
R. G. BETTS, Managing Editor
S. P. McMINN HOWARD GREENE
R. W. SHERMAN E. F. HALLOCK

ADVERTISING DEPARTMENT
BROCK MATHEWSON, Advertising Manager
HOWARD L. SPOHN LOUIS R. SMITH

WESTERN ADVERTISING MANAGER
W. H. TRIPP, 1001 Ford Building, Detroit
GUS. H. JOHNSON C. H. HANDERSON
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NEW YORK, DECEMBER 19, 1912

CAR MAKERS AND CARBURETTERS.

If need be, let this be considered an appeal for the unknown or the little known carburetter. There are many of them, we well know—probably much chaff and surely some wheat; but good or bad, their makers have a difficult time securing the ears, much less the real attention and support, of the car manufacturers whom they seek to interest.

It is not meant to say that the well known and well established carburetters are lacking; but it is meant to say that many of the unknowns and little knowns hold promise of results that justify more than polite notice.

It is a fact that individual owners have almost revolutionized the performance of their cars by simply changing carburetters. In many instances, the results achieved have been not short of marvelous. The cars have gone faster, climbed better and handled more flexibly and more economically in almost every direction.

The car manufacturer, however, remains wedded to one, or two, or three, or four particular carburetters and more or less resolutely refuses to have to do with that which is new. Perhaps his attitude is born of experience; perhaps it is born of price; but whatever the cause, the belief is spreading that while all engines will work with any carburetter, they will work very much better with a particular carburetter, and in many instances the improvement is prodigious and far-reaching.

As indicated by individual experiences, it does not seem fair to those who purchase his productions that any car manufacturer should lift a deprecating hand toward any carburetter, however new or little known. It will not be denied that the carburetter is a vital factor—possibly the most vital one—in the performance of any car, and since no manufacturer should be satisfied with less than the best possible performance he should welcome whatever offers to that end.

The new carburetter that is gratuitiously presented to him should not be suffered to accumulate dust and cobwebs on the shelf; it should be put to use and tried out thoroughly in the only school worth while—the school of actual road use.

It is fair to believe that so many cars can be made so much better by a mere change of carburetters that the wonder is that a narrow policy should prevail in any factory in which automobiles are produced.

STEEL WHEELS AND WOOD ONES.

As was perfectly natural, the materials employed in the construction of early automobiles were the materials used in carriage and wagon building at the time, and they were the best materials then known for the purpose. By degrees, however, the wood and wrought iron of horse-drawn vehicles gave way to steels of various kinds and qualities, until now there is little of the typical chassis that is not built of steel, excepting the engine, of course, and the wheels, which in the great majority of cases are of wood.

Whether wood will remain in the ascendancy for wheel construction, however, is a question that can be decided only by time and the process of elimination and the survival of the fittest. It seems certain that there will be an increase in the employment of steel wheels, which are made in a number of forms and types. Steel wire wheels, which were used on many early machines, only to be abandoned in favor of wood, again have become popular in Europe and are attaining popularity here. Pressed steel wheels are and have been for years in use on light commercial vehicles. Cast steel wheels are finding favor in the eyes of manufacturers of heavy trucks. Tubular steel wheels, having the outward appearance of wood wheels, have been built for years and have much to recommend them.

While the claims of wood wheel manufacturers, in effect that the wood wheel is the best wheel, are given great weight by the fact that the wood wheel is now the standard type, it is said, on the other hand, that the demand for the very high grade of timber necessary for the wheelwright's purposes is increasing so fast that the supply cannot keep pace with it. Such being the case, the inevitable result will be a movement in the direction of steel, which is becoming cheaper to buy and cheaper to manufacture as time goes on. And it seems probable that in the case of wheels as in the case of many other things, steel construction eventually will embody all the advantages of wood and combine them with its own peculiar virtues. And last, but not least, doubtless the manufacturers of wood wheels will gradually change over, with the demand, to the building of steel wheels, just as many former manufacturers of horse-drawn vehicles have gradually turned from the old to the new and now are full-fledged automobile manufacturers.

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CHRISTMAS SPIRIT ENTERS INTERNATIONAL "LEAGUE"

Proof of it Spread on Directors' Minutes—Crying Demand of "Hundreds of Members" is Generously Granted.

There was a momentous meeting in Buffalo one day last week—a meeting of the International Automobile League, Inc. It is probable that all of the four men who comprise the "league" were present, and it is not impossible that they chuckled quietly at the success they have met in inducing full-grown persons to pay an annual fee for the remarkable privilege of buying goods which they have for sale. At any rate, it is certain that they considered a very serious subject; they desire to have it believed that they considered it only in response to the "request of hundreds of members," which is the touching definition applied to the fee-givers.

These alleged "requests" of the alleged "hundreds" of alleged "members" induced the "league," in solemn session, to adopt and spread on the minutes of the meeting the following motion:

"Moved, seconded and carried that all members of the League be permitted to buy any article listed in our catalog for their friends for holiday presents until January 1, 1913."

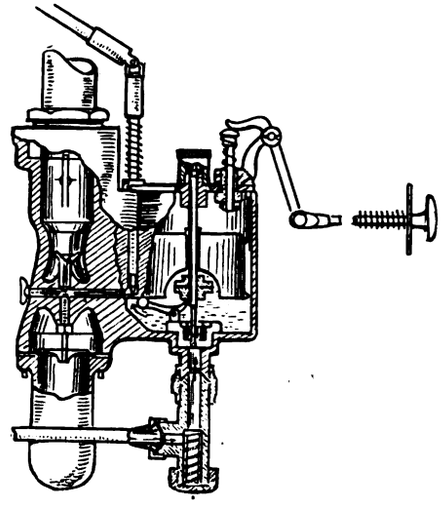
The "hundreds of members" who made the "request," and many others who did not make it, have been gracefully informed of the granting of this generous dispensation, the information being conveyed on a pretty letterhead which at its top bears a reproduction of the yellow flag which the "league" has adopted as its hallmark, and at its foot a delicately engraved annotation, "This letter was dictated to the dictaphone, but not re-read." The "league" is nothing if not circumspect, even when addressing its "members." At last accounts, however, Santa Claus had not designated the Buffalo institution as a dispensary of Christmas gifts for any of his "friends."

Price of Platinum Continues to Soar.

It is probable that if those persons who are wont ruthlessly to file the platinum contacts of their magnetos knew the present market price of the metal they would be less favorably disposed toward the file as a cleansing implement. Unlike other precious metals, platinum continues to increase in cost, and at the present time the top notch price recorded in Maiden Lane, New York City, is $47.50 an ounce for the hard metal, such as is used for contacts, and $45 an ounce for the soft metal. No satisfactory substitute for the metal ever has been found, and the present chief source of supply, which is in the Ural mountains in Russia, scarcely is more than sufficient to fill the demand.

Little Known Features of Well Known Cars

That variations in temperature and in humidity each have an effect upon the operation of a motor is a fact that is only too well known to the veriest novice at motor car operation. Altered atmospheric conditions naturally mean altered proportions of

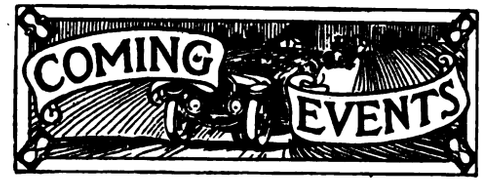


FRANKLIN NEEDLE VALVE CONTROL

air and fuel which enter the cylinders, provided carburetter adjustments have not been changed, and any change in the relative quantities of air and fuel effects the operation of the motor. For these reasons not a few designers of motor cars believe such a thing as an adjustmentless carburetter, while it may operate and give really good results, to be not a little inferior to the type wherein the relative proportions of gas and air can be manually altered.

Such is the belief of the designers of the Franklin car, and it is responsible for the production of the carburetter shown in the accompanying illustration, the feature of which is the facility with which the flow of gasolene to the single jet can be increased or decreased simply by turning a small lever on the end of a shaft which protrudes through the dash. Naturally the shaft is a continuation, or better, an addition to the needle valve stem, the valve being operated through the intermediary of a universal joint. Adjustment can be made without the driver leaving his seat.

Depression of a pedal closes the starting switch and the electric motor turns the gasolene motor over at high speed until the engine takes up its own cycle of operations.



December 7-22, Paris, France — Paris Salon.

January 2-10, New York, N. Y.—Importers' salon in Hotel Astor.

January 4-11, Montreal, Can.—Annual automobile show in the Drill Hall and Armory, under the auspices of the Automobile Club of Canada.

January 6-11, Cleveland, Ohio—Cleveland Automobile Show Co.'s exhibit in the Central Armory.

January 11-18, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Pleasure cars only.

January 20-25, Philadelphia, Pa.—Philadelphia Automobile Trade Association's exhibit in the First and Third Regiment Armories.

January 20-25, New York, N. Y.—Automobile Board of Trade's 13th annual show in Madison Square Garden and Grand Central Palace. Commercial vehicles only.

January 21-26, Toledo, Ohio—Annual show in the Exposition building under the auspices of the Toledo Automobile Shows Co.

January 25-February 1, Providence, R. I.—Annual show of the Rhode Island Automobile Dealers' Association in the Providence State Armory.

January 27-February 1, Ottawa, Can.—Annual show of the Ottawa Valley Motor Car Association in Howick Hall.

January 27-February 1, Scranton, Pa.—Third annual show of the Scranton Automobile Dealers' Association in the 13th Regiment Armory.

January 27-February 1, Detroit, Mich.—Detroit Automobile Dealers' Association's Show in the State Armory.

February 1-8, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Pleasure cars only.

February 3-8, Washington, D. C.—Washington Automobile Show Co.'s exhibit in Convention Hall.

February 8-15, Hartford, Conn.—Sixth annual show of the Hartford Automobile Dealers' Association in the State Armory.

February 10-15, Chicago, Ill.—National Association of Automobile Manufacturers' 12th annual show in the Coliseum and 7th Regiment Armory. Commercial vehicles only.

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"SELLING STUDEBAKER CARS" DONE BY SALESMEN-ACTORS

Corporation's Branch Managers, in Conference at Factory, Stage a Play with a Purpose—Novel Means of Education.

As carefully staged as a Broadway play and with an "all-star cast," carefully coached in the individual roles, a group of men prominent in the automobile trade held an audience in Detroit one day last week with a production, the nature of which was absolutely unique.

"Selling a Studebaker Car" was the subject. The members of the cast were picked from the Studebaker Corporation's corps of branch managers ,assembled in annual conference.

The play was in two acts, the first treating of the sale of a Studebaker "35," while the second concerned itself with the lighter car of the line—a Studebaker "25." The star part was naturally that of the salesman. This was taken, respectively, by Geo. H. Phelps, manager of the Studebaker automobile branch in New York, and by L. J. Ollier, who has charge of the firm's branch in Los Angeles. The prospective buyers were well-posted Detroit business men, not connected with the Studebaker organization and representing as nearly as possible the typical automobile "prospect."

Particularly novel was the choice of a "stage villain." This part was taken in a collective way by other branch managers, each of whom had been instructed to argue the merits of some competing car. Arthur I. Philp, assistant sales manager, acted as stage manager.

Both the branch managers chosen for the star parts are famous in the Studebaker organization for their intelligent enthusiasm over the Studebaker product. They had carefully studied their problem to make the demonstration as near the ideal as possible. The "approach" was adroit, and applause was frequent as the members of the audience recognized the application of basic principles of the salesmen's art.

The fun began, however, when the "heavy" characters butted into the dialogue by advancing the arguments of alleged superiority on behalf of rival cars. This was done, of course, to illustrate many easy methods of refutation. Some of the most expensive types on the market were represented by men thoroughly familiar with them. When the debate had been ended, the star seized the opportunity in approved style, and closed his "sale" by prompt production of a fountain pen.

A further touch of realism was given the sales drama by one of the "buyers" who, although playing a role in the play, was so impressed by the points of superiority demonstrated for the Studebaker car that he visited the Detroit branch the next day and entered a real order for one of them.

While the dramatic production was one of the most interesting features of the big Detroit conference, it was only a part of a systematic, studious week which the Studebaker men spent at Detroit along plans formed by Sales Manager Ernest R. Benson. Morning and afternoon sessions were held and sales policies thoroughly discussed. One day was devoted to a clinic on the new models, during which Chief Engineer J. G. Heaslet held the floor for six hours, explaining the mechanical details. One day was spent at the Studebaker vehicle factories at South Bend, Ind.

Prior to their departure, the branch managers joined in presenting General Manager Gunn with a handsome catseye diamond scarfpin, as a token of their appreciation on the first anniversary of his connection with the company. During this period Mr. Gunn has virtually reorganized the sales and manufacturing methods of the Studebaker automobile division.

Court Rules on Point in Bankruptcy.

That a trustee in bankruptcy may be sued for debts which he contracts as trustee was held to be the case on Tuesday of this week, 10th inst., by Judge Holt of the Federal court in New York City, in the case of the Dorian Remountable Rim Co., which has been in the bankruptcy court for several months. The decision was a denial of a motion made by the trustee, Joseph M. Conklin, asking that the Standard Nut & Bolt Co. be enjoined from suing him for an account of $300.54.

This amount represents the price of goods ordered by Conklin but which he states he refused to accept because the delivery was delayed. The bolt company, which has brought suit in the Municipal court, declares its claim is bona fide. The court denied Conklin's motion with the statement that it had no authority to forbid the bolt company continuing its suit, inasmuch as the debt was contracted following the filing of the petition in bankruptcy. Had the debt been contracted perviously, the suit could not be brought without the permission of the Federal court.

Collars to Match Prominent Cars.

In a haberdashery in Springfield, Mass., Packard and Pierce-Arrow collars are being offered for sale, presumably as a bid for the patronage of the owners of those cars. Carried to its logical conclusion, it is possible shirts, neckties and socks to match the names of cars will soon appear.

TIME AS CAPITAL AND WAYS OF ELIMINATING ITS WASTE

Careful Planning Can Conserve That Which Is One of Salesman's Greatest Assets—"Waits" That Cut Holes in Profits.

Selling expense is a big item in the book of every dealer. Often it is **the** big expense. How to get greater efficiency out of yourself and out of your salesman is a problem worthy of your most concentrated thought.

It means planning your time carefully, going over each detail carefully in advance, thinking about every probability, scanning the situation backwards and forwards, the taking of pencil and paper and putting things down, the making of appointments and keeping them, **the elimination of as** many "waits" as possible. It means making others appreciate the value of your time by handling it as if you yourself set a distinct value on it.

Time is the salesman's capital. This has been remarked before; it probably will be said and written a good many more times before everyone grows wise to the fact that there is much more than a commonplace statement in that sentence. Time is the salesman's "wealth employed in or available for production"; in that respect time is the salesman's "capital."

When you see a demonstrating car resting easily at the curb of a popular billiard room you are very much inclined to question how much of the salesman's wealth is "employed in and available for production." Indeed, you are quite likely to think of sales leaks and losses. Such appearances are not always conclusive; nevertheless, the thought is inevitable.

Too many salesmen waste their time. They "cash in" enough to pay a profit, perhaps, but not anywhere near their full possibilities, simply because they do not conserve their time—their capital, if you will —by carefully planning for every moment of its use in advance of the demand.

Just as a bill once broken disappears rapidly, so a day not well planned and the plan stuck to, is frittered away; thus, at the close, instead of feeling glad because of a good day's work done, we are quite likely to say with the late Cecil Rhodes of South Africa, "So much to do; so little done!"

The Krit Motor Car Co., of Detroit, has established a branch in Oklahoma City, from which the States of Oklahoma, Texas and Arkansas will be handled. It is in charge of R. B. Fremont, as district man-

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PERSISTENCY AS SALES HELP

Close Following Up of Prospective Buyer and Urgent Argument May Prove Convincing—One Unusual Method.

"It took me two years to sell an automatic water heater to Mr. Connover," said a salesman on board a train the other day. "I nearly ran my legs off after him the first year; but for various reasons he put off having it installed. I had called at his office time and time again. He had always given me a courteous reception and listened attentively to what I had to say; but I could not seem to get his order, even though he seemed interested.

"One September day I fine-tooth-combed my list of prospects; the only one that it seemed to me would be ready to do business was Connover. I decided to sell him or bust. I 'phoned to his office; he was not there. They told me he was at home. There was a street car strike on, so I walked to his home—four and a half miles away. It was one of the hardest walks I ever undertook.

"When I got to the house I found Connover was laid up. He had experienced a peculiar accident—cranked his car with the high gear in mesh and the car had knocked him down and run over him. He was just getting up—had his dressing gown on—and when my card was taken to him he walked to the top of the stairs and called down that he would be glad to see me some other time.

"I replied that I had walked four miles and a half to see him. I had to sell a water heater that day, and he was my one prospect that I thought ought to have an automatic water heater at once; so I had come out to get his order. I finished up by telling him that I was so tired from my long walk that I was going to stop and rest, anyway—and was going to stay till I got his order. Connover smiled and said, 'Well, old man, you write the order and I'll sign it.'"

It is the last little push that brings the name on the dotted line. Everyone admires grit, and the man who will dare a nine-mile walk on a hot day to get an order is almost certain to get it if his goods are right.

Fortunately, the automobile salesman does not have to walk; but he often gets a chance to display the same qualities that make for success in other lines, where competition is still keener; persistence and determination are well worth developing to a high pitch.

SPECIAL TRAINS THAT FOLLOWED A STRIKING AD.

When L. J. Ollier, manager of the Studebaker branch in Los Angeles, Cal., received word of a five-page announcement that the Studebaker Corporation was to publish in the Saturday Evening Post he got busy.

Every dealer in his territory was notified. Every sub-dealer was likewise notified, so that every man interested knew what was coming and had a chance to plan accordingly.

Everybody was watching for the advertisement when it appeared; every dealer had staged the advertisement by means of posters furnished by the manufacturer, so that everyone worth while in all towns reached by these dealers knew that the advertisement was coming out on a certain date. Naturally when they got their copy of the Saturday Evening Post the first thing they did was to turn to the Studebaker announcement.

As a result of this careful planning, it is a matter of history that when the new Studebaker models arrived in Los Angeles the sub-dealers had lined up out-of-town prospects to the number of twelve hundred who came in three special trains loaded with people eager to see the new models on their arrival.

Such a thing is unprecedented in the history of any kind of merchandising and shows what can be done where every detail is worked out in advance, interest aroused and then people invited to do a definite thing. In this case the definite thing was "come and see"—and have dinner at the expense of the branch.

SHOW WINDOWS AND BOOK COVERS ARE VERY MUCH ALIKE.

One way of getting the outsider's viewpoint of a place of business is by conjuring an analogy between show windows and book covers. Every business man knows the difference between show windows and book covers. Every business man knows the difference a book's exterior appearance makes with its attractiveness in the mind of a prospective reader—or buyer. The poorly gotten up cover is taken as an indication of an uninteresting piece of reading, and while the book itself may be one of the best, its biggest handicap in the race for popularity is its cover. That a very average book has an attractive cover may serve to cause a prospective reader to start reading and complete the story. Likewise a better book may be completely ignored because of its exterior appearance.

The show window and store front are the covers of the store; they act as do the covers of a book. The primary function of a store front is to form a barrier between the interior of the store and the outside world, and that—protection—was the original idea in the book cover, and both still retain their original use. But book makers realize the value of pretty and attractive covers and act accordingly. Dealers may do the same, if they but will. However fine the line of goods may be the man who is unacquainted with what is inside is going to make a bee line for the attractive and up-to-date front where the show windows are show windows in reality and not a repository for junk.

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AWAKE N DISING WORLD

MAKING SERVICE UNDERSTOOD

Term Often Vague in Mind of Car Owner—Explaining It Enlightens Customer and Proves Trade Winning Story.

Too many electric car salesmen talk about service without giving the prospective customer a real insight into what it means. The word "service" is an intangible thing so long as it is unexplained. The man who talks about "service" should have something definite to offer and should not wait till he is pinned down to explain just what he and his concern mean by "service."

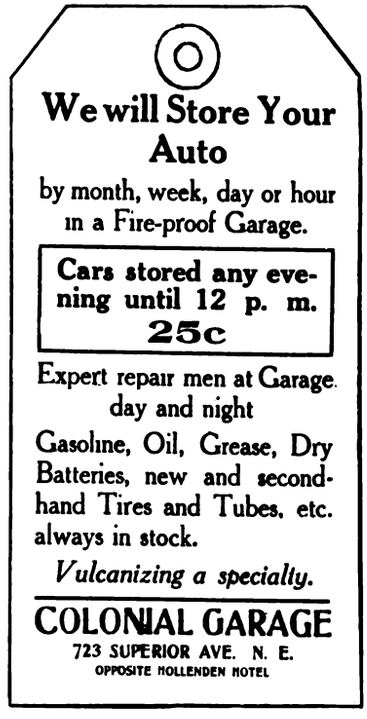
Service is such an important item in the sale of an electric car that it can well be emphasized when making a sale. Indeed, unless it is properly explained in detail, the prospective customer may wonder why garaging at an electric car garage costs so much more than the flat storage rate paid by gasolene car owners.

A dealer in electrics who has a complete service station says: "Our service is as complete as we know how to make it. We charge a rate of $42 a month for complete service. We deliver and call for customers' cars. He sets the time, and on the dot his car is waiting for him at the curb. At night when he is through with it he 'phones and someone calls for it and brings it to the garage. Here all the cushions are taken out and the car thoroughly cleaned with air brushes. The car is then placed on the washing rack and afterwards given a chamois-skin rub-down. This is done every night, so that your electric is just as neat and clean and spotless every day as any part of your house. Batteries are inspected every week and charged as often as needed. Any defects or irregularities in batteries are immediately discovered and everything kept in perfect repair. If you want a flat storage rate we charge exactly the same as any gasolene garage. But, consider that you have absolutely no expense except for tires or accidents that is not covered by our complete service charge."

If all electric car salesmen would be as careful to drive home all these points they would find it highly profitable.

TAG THAT HELPED A GARAGE.

Advertising a garage in a large city is not the simplest problem in the world. Generally speaking, each garage depends for its patronage on the automobile owners residing in its immediate vicinity, which means that advertising in the daily press entails an expense that is out of reason to the probable results. Perforce, the garage proprietor must resort to other means for drawing new trade.



In Cleveland, O., the Colonial Garage Co., which is located at 723 Superior street, North East, has found the tag, reproduced herewith, an economical and effective business-bringer. During the absence of the owners, it is tied to the steering wheels of cars which Colonial garagemen find standing outside of office buildings, theaters and hotels in the immediate vicinity, which procedure means that it can not be blown away, or thrown away, without attracting notice of some sort.

The fact that the tag also names a special rate for storage up to 12 P. M. makes a direct appeal to theater-goers, and to others who appreciate the difference between safely storing their cars in a reputable garage and leaving them unattended at the curb.

CHRISTMAS SUGGESTIONS.

Christmas will be here in six days. What kind of display are you going to have? Will you have a little of the Christmas spirit felt in your salesroom by means of appropriate decorations? Why not "fix up" a little for Christmas and then extend invitations to some of the people whom you know intend buying a car with a view to their making it a Christmas present to their family?

It would not work with everyone, of course. But it's worth trying—and you can never tell how good an idea it is until you have tried it. Suppose you try it.

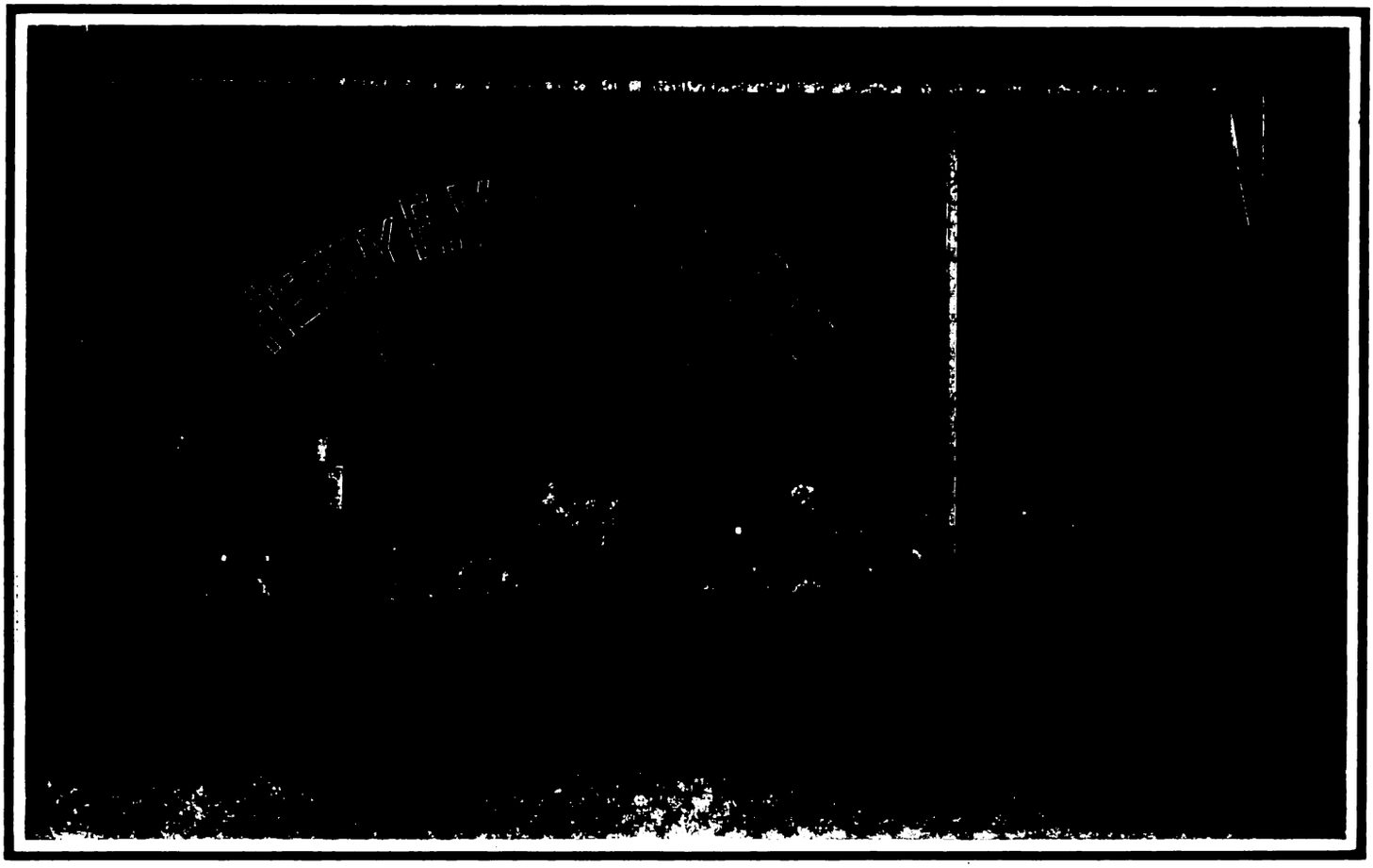
EVIDENCE OF WIDEAWAKENESS.

Immediately after the appearance of the last issue of Motor World, one "live wire" Detroit dealer followed its suggestion of putting up a big "anti freeze" sign in the garage. Another one put a sign on the garage entrance so that everyone coming in would see it. And another was observed with a window sign reading "Orders for Hood Covers Taken Here." One of the surest indications of the real merchant is the quickness with which he adopts good suggestions.

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WEAVING CHRISTMAS SPIRIT INTO ACCESSORIES

Dealer Catches the Public Eye by a Yuletide Show Window—Santa Claus Causes Passersby to Stop and Smile—Clever Display Which Shows That Seasonability in Window Dressing Is Easily Possible.



BROOKLYN ACCESSORY DEALER'S WINDOW DRESSED FOR THE YULETIDE SEASON

Putting the Christmas spirit into a show window display during the holiday season, having a Fourth-of-July dressing at that time of year; bringing out a Thanksgiving Day effect when this holiday is at hand, and in every instance maintaining a seasonable setting for wares displayed is recognized by wideawake merchants as one of the basic principles of window dressing. Unfortunately, not a great many of those who sell automobiles or automobile accessories strive for such effects. One of those who does so and who has taken advantage of the Christmas season as an advertising asset is the firm of Henry E Vaughan & Son of 1168 edford avenue, Brooklyn, N. Y. Leo H. Vaughan, now the active member of the firm, is the "Son," and while he is accredited with being the business head of the house, he admits he was assisted by his wife and his mother in evolving an attractive Christmas show window

Vaughan has succeeded in getting a striking effect, shows a large quantity of goods, and still does not give the window the too usual appearance of being overcrowded; no photograph is capable of presenting the window as it is seen by the passerby, but a reproduction serves to illustrate the general scheme, even though the picture does not show the glistening snow and bright accessories which make up the whole.

What first strikes the eye is a miniature house with snow-covered roof, standing in the midst of a snow-blanketed landscape which sparkles like the light, new-fallen snow of winter. The snow is nothing more nor less than cotton batting sprinkled with ground mica. This house has upon its roof a Santa Claus, with a pack, about to descend the chimney. In the front yard are his reindeers, somewhat startled in this atmosphere of horselessness; at the left of the house, viewed from the street, is a little garage containing a limousine, while two tires stand beside the doors. Lawn shrubbery accentuates the air of reality.

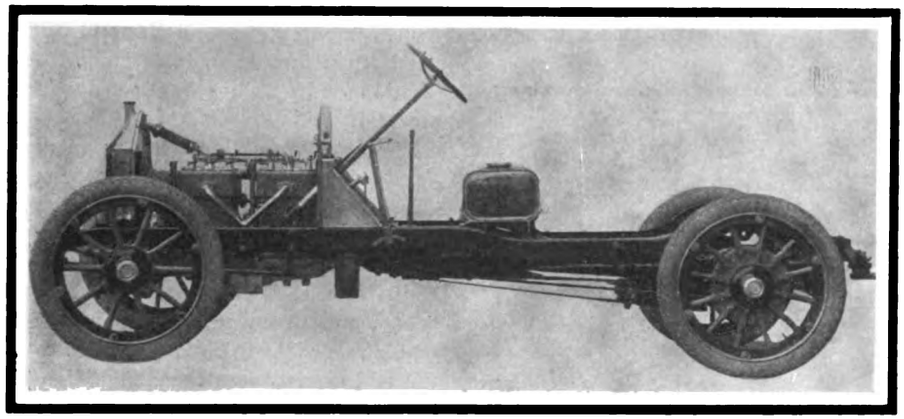
Back of the house, not detracting from the beauty of the scene but nevertheless asserting its right to a part in the display, is a black, circular tire trunk. At each side of the window three glass shelves are arranged in steps, and upon them are placed goggles, small tools, speedometers, clocks and an innumerable number of polished articles. The shelves at the left are banked with boxes of polish, and this section, while it may be said to be the least attractive part of the layout, is cleverly grouped and harmonizes well. Horns, mirrors and bright metal pieces are strewn with a designed carelessness over the landscape and over all is a sprinkling of mica. The mica on these polished parts gives an effect which is peculiar and striking and calculated to attract attention.

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FIRST OF THE CHEVROLET "SIXES" MAKES ITS DEBUT

Proves Exceptionally Quiet and Flexible in Demonstration—New Air Starting Device with Rotary Motor.

Embodying a number of unusual constructional ideas that give some slight evidence of foreign inspiration, the first product of the Chevrolet Motor Co., of Detroit, Mich., which is the smaller of the two "sixes" that eventually will go to make up the line and is styled the Chevrolet "40," at length is ready for distribution, after having been in active course of preparation for more than a year.



CHEVROLET "SIX" CHASSIS, SHOWING INTAKE SIDE OF MOTOR

In fact, as long ago as June of the present year, the first cars came through the factory, and though they were merely experimental vehicles, their appearance and their operation under demonstration in the streets of Detroit and environs left little to be desired. Under the guidance of Louis Chevrolet, who is the accredited designer of the car and for whom it is named, the car was put through its paces for the benefit of a Motor World man, and the manner in which it could be made alternately to crawl along at less than two miles an hour—on high gear, of course,—and to skim over the highways and country roads at better than 50 miles an hour was nothing if not remarkable.

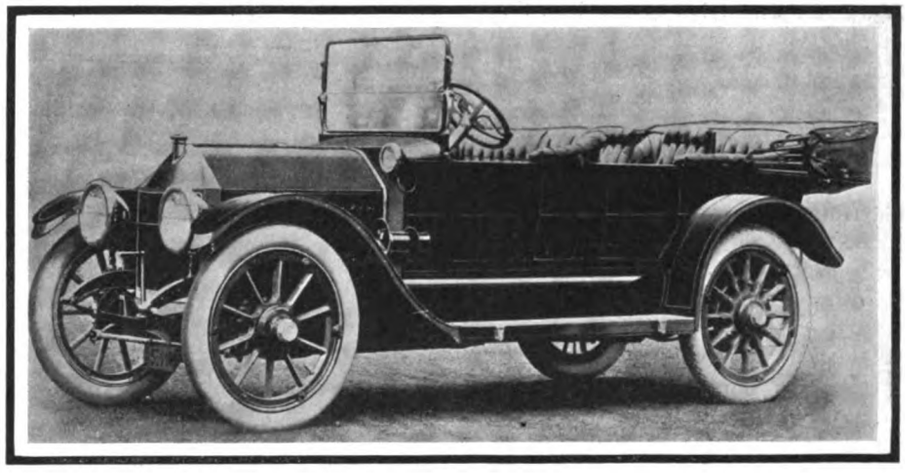
Time after time the motor was throttled down so that it barely turned over, and with high gear enmeshed the throttle was opened suddenly to the limit without eliciting the usual choking and missing that generally accompanies such practice with a great number of motors. Instead, the motor "picked up" quickly and steadily, until, at approximately 55 miles an hour, it was necessary to apply the brakes by reason of the threatened activity of the police. Vibration was singularly conspicuous because of its absence. In fact, it is doubtful if any one feature of the car is calculated to impress to a greater degree than the absence of vibration, unless, perhaps, it is its quietness. Even at high speed on intermediate gear, the vibration was nil, and the motor was no noisier than it was at 10 miles an hour.

Later, when the car had been returned to the factory floor, Chevrolet successfully balanced a lead pencil on the motor, the while increasing the speed until 2,000 revolutions a minute was registered by the tachometer. At the time, the tires were pumped up to 85 pounds pressure and the car stood on a comparatively flexible wooden floor that was calculated to induce rather than to reduce vibration.

The reason for the absence of vibration, it is pointed out by Chevrolet with a considerable degree of pride, is due to the shape and construction of the crankshaft quite as much as to the careful manner in which the weight of reciprocating parts has been kept down to the minimum and the care that is taken in assembly. The crankshaft is a drop-forging and is peculiar in that it has semi-circular counterweights forged integral with it, the result being that they act as supplementary flywheels, in a sense, and ensure positive continuity of motion without interruption of balance. The weights are so shaped and located that, if the crankshaft were to be placed on an inclined plane, it would roll down it by gravity, the semi-circular pieces supporting it alternately.

The motor is an unusually compact design, with its six T-head cylinders cast in blocks of three, the bore and stroke being 39/16 inches and 5 inches, respectively. From which it may be judged that there can be no doubt of the aptness of the designation long-stroke. The motor is supported at three points in the chassis frame. Connecting rods are drop-forged I-beam section with die-cast babbitt bearings, and the pistons are of the convex type. The main engine bearings also are die-cast babbitt and measure 2 x 37/16 for the front, 25/16 x 3⅛ for the center and 2¼ x 4½ for the rear bearings. The crankcase is aluminum and the camshafts are drop forged with the cams integral.

By way of reducing necessary noises to the minimum, the timing gears have been made of the helical type and run in oil. Ignition is effected by means of a dual high tension magneto system and cooling is by centrifugal pump circulated water. The lubrication system is a combination of force feed and splash, in which great pains have been taken to ensure against the possibility of smoking. "Mixture" is furnished by a float feed carburetter, especially developed for the motor and fitted with an exhaust gas heating arrangement.



CHEVROLET SIX-CYLINDER "40" SIX-PASSENGER MODEL

For motor starting purposes and also to inflate the tires, the English compressed air system has been adopted. In its simplest aspect it consists of a twin opposed air compressor which is hung beneath the propeller shaft and driven through gears from it, an air tank, and a small rotary air motor which is hung beneath the chassis frame and drives the gasolene motor through the intermediary of gearing cut on the peri-

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phery of the flywheel. A pedal, conveniently located near the driver's foot, serves to place the air compressor in operation for the short time necessary to obtain the required pressure. The lever which controls the air starting motor is located on the dash. In operation, the turning of the lever serves first to enmesh the gears between the air motor and the engine and in the same instant to turn on the air, thus "spinning" the motor at a fairly high rate of speed. Immediately the motor picks up its own cycle of operations, the gears automatically are "kicked" out of engagement, nor is it possible to engage them with the gasolene motor running.

From the motor, power is transmitted to full-floating rear axles through the intermediary of a large diameter, leather-faced cone clutch and a three-speed selectively operated gearset with the control lever located in the center of the footboard. The steering wheel is placed at the left side with the emergency brake lever, which is unusual in construction, at the left. In designing the emergency brake lever cognizance has been taken of the desirability, or, rather, the necessity, of being able to get quick action. To this end, the lever is cranked about six inches from its upper end, the handle portion projecting toward the driver. Its position, therefore, is nearer than ordinarily would be the case, and the construction is such as to permit a perfectly straight pull-back with minimum exertion.

The front of the chassis is supported on the orthodox pattern of semi-elliptic springs and the rear is supported on three-quarter platform members, which type was chosen by reason of its greater resiliency and reduced tendency toward side sway. Both sets of brakes are equalized and are located in 16-inch rear wheel drums which are lined with Raybestos and carefully protected from dirt. Service brakes are pedal operated. The wheelbase is 120 inches and the wheels are shod with 35 x 4½-inch tires mounted on demountable rims.

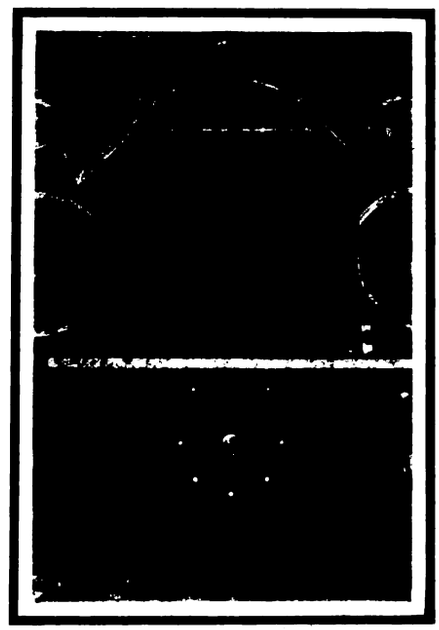
In external appearance, the Chevrolet car is distinctive by reason of the use of a V-radiator, and is low-hung with high, flush sides unmarred by such projections as door handles and latches. The running boards are clear and the lines are well blended both at the rear of the tonneau and at the junction of engine hood and dash. Trimmings are in nickel plate and black enamel; electric lights are used throughout.

In the matter of equipment there is little that is missing; the price of the car, which is $2,100, includes mohair top with envelope and side curtains, windshield, speedometer, dynamo electric lighting system, compressed air engine starting system and the usual equipment of tools, spare parts, pump, jack, horn, tire repair kit, etc.

HARTFORD STARTER MADE APPLICABLE TO USED CARS

Ingeniously Adapted Literally to Take the Place of the Crank —Size and Weight Facilitate Matters.

Working on the theory that there is just as big a field for the exploitation of the electric engine starter among users of cars which are not so fitted as there is among producers of new cars, the Hartford Suspension Co., of Jersey City, has placed upon the market a "revised" edition of the Hartford starter which is intended for attachment to any car, whether new or old, with a minimum of labor; placing the device involves no changes in the car mechanism other than the removal of the starting crank.



HARTFORD EXTERNAL STARTER

The starting unit, which embraces a 1/3 horsepower motor and a double worm reduction gear, attaches to the crankshaft in place of the starting crank, the weight of the motor, which is but 24 pounds, being carried by a bracket riveted to the front cross member of the frame. The dynamo, which is a separate unit, can engage with the engine at the most convenient point; it can be frictional driven from the flywheel, or belt driven from the propeller shaft or fan belt wheel, according to conditions. It is of the constant speed type, the speed being regulated by means of a friction clutch operated by a centrifugal governor which disconnects the dynamo shaft from the driving shaft when the speed of the latter exceeds a predetermined limit. With the addition of a magnetic cut-out for the purpose of disconnecting the battery from the dynamo at such times as the electromotive force of the dynamo is below that of the battery, and which is positioned on the dash, and a 12-volt, 35-ampere-hour battery, the system is complete.

Low Develops a "Forced Induction" Four.

After introduction to the motoring public in the form of a single cylinder motorcycle engine and subsequent extensive experimentation, Dr. A. M. Low, who is a British inventor, has further perfected his "forced induction petrol" motor, his latest design being a four-cylinder automobile engine which, according to all accounts, gave a more than ordinarily convincing demonstration of its ability on Brooklands track recently.

The new four-cylinder motor operates on exactly the same principle as the smaller "single" that was illustrated and described in Motor World under date of April 4th, "petrol" being contained in what in other engines is the water jacket, where it is heated and expanded, thus creating considerable pressure, which is employed to inject the fuel directly into the combustion chamber somewhat after the manner of a Diesel engine. Compression is approximately 150 pounds to the square inch.

Despite the fact that the engine is rated at 16 horsepower, according to the R. A. C. formula, it is said to be capable of developing no less than 100 horsepower at the phenomenal speed of 3,000 revolutions a minute. Among the other claims that are made for it are that it is exceptionally flexible, that it may be throttled lower than the ordinary engine without danger of "stalling," and that its requirements in the way of fuel are so exceedingly modest as to occasion surprise, as many as 40 miles to the gallon of "petrol," which is the British name for gasolene, having been obtained.

Effect of Porus Nickel Plating.

Nickel plating not infrequently is porus to a considerable degree, and therefore is permeable to moisture. If the metal plated is iron or steel, water penetrating porus nickel plating may easily cause rust, which passes through the pores of the nickel discolors the finish and gives rise, sometimes, to the idea that nickel itself will rust. The formation of rust under the conditions referred to is, of course, destructive to the plating.

Weakening Rivets by Hammering.

Too much hammering in heading a rivet often is worse than not enough, because the metal will be so weakened that the head will be broken off under comparatively slight strain.

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REILLY CLAIMS TO BE THE ORIGINAL "SPUG"

Sales Manager Encounters Dealer in Shopping Crowd and Reilly Tells How Many Profits Are Given Away—Enumerates Useless Giving With Which He Has Long Since Dispensed.

Reilly had remained close to the side of his wife in the turmoil and battle in the big department store, having entered with a heart full of the true Christmas spirit, but now he felt like one of the Kilkenny cats in the last round of that memorable battle wherein "they fought till they ate each other up," and, deciding that discretion was the better part of what wilting valor he still possessed, he began to slip along the counter. He thought himself free, but just then the counter-rushers executed a flank movement, with a portly bundle-burdened warrior in the lead; the diminutive automobile dealer began to have visions of slow moving black horses and floral wreaths, when he was surprised to see himself pop out from between the counter and the heavy woman like a wet bean that is pinched between thumb and finger.



Shopping Causes Reilly's Downfall.

What he bumped into in the semi-open space he did not know; he was endeavoring to find his hat and get his bearings when a merry laugh and his hat slapped down onto his head caused him to look up; there were the factory sales manager and his wife enjoying the scrabble and the downfall of the little male shopper.

"Why don't you stay in your own town and shop? What brings you down here?" good naturedly demanded the Sales Manager.

"What?" repeated Reilly in a tone of disgust. "My wife." And as he spoke he peered critically into the struggling mass of humanity in search of that half of which in this case had proved to be the better by long odds.

"Where is she?" asked the Sales Manager with a smile.

The dealer's only answer was to point to the crowd which just then gave an extra surge, and Mrs. Reilly burst through; her hat was awry and there were other disheveled details, but her face beamed in triumph, for in her arms she clutched one more bundle than she had when she and her husband went into the contest.

"You look all in, Reilly," said the Sales Manager, interrupting the animated conversation of the two women.

"I am," he hastened to admit. "Wouldn't you women like to shop together for a while?" he added. "I'm feeling faint; I need air."

Men Shoppers Get Leave of Absence.

The women smiled skeptically, but permitted Reilly and the Sales Manager to take possession of what spoils already had been collected and the men departed, but under promise to be at the shirtwaist counter in an hour.

The air in the street did not prove appealing, and almost by instinct the pair sought the atmosphere of a nearby rathskeller where, at least, they could find a place to lay the bundles. As the waiter began to hover about in a waiterlike way the Sales Manager remarked, "You ought to be a Spug, Reilly."

"Spug! What's that?"

"Latest thing, you know," explained the Sales Manager. "Society for the Prevention of Useless Giving, S-P-U-G, Spug. May save your life yet."

"Useless giving, eh? Well, if that's what it is I'm the original Spug, but never knew what to call myself."

"If you are, what are you doing here?" queried the salesman.

"Protecting my wife—at least, I tried to," sheepishly answered Reilly. "She never got this spugitis."

"But I began to cut out useless giving in every way several years ago," continued the dealer, "in business, Christmas gifts and every——"

"What kind of creature is a Spug business man?" interrupted the Sales Manager with curiosity.

Reilly Discusses Spug Principles.

"A good kind," asserted Reilly, as he reached for a little green glass that had somehow found its way to the table in front of him. "This Spug stuff may be new, but the principle is older than Adam's grandfather. You may not think of business as a method of giving away things, but too many men make it such. I've cut it out myself and will have the job complete if I can only get my wife inoculated with spugitis."

"Where did you ever give anything away in business?"

"Where? A great many places," replied Reilly. "I used to go on the assumption that in order to do business I had to give away my profits, while all the time I never realized that real business doesn't consist of giving away profits. Without profits, it isn't business.

"There are ways too numerous to enumerate. What probably is the greatest example of useless giving is in trading cars. How much profit do you suppose is given away right there? A man wants a new car and wants to trade in an old one; he wants to get more for the old one than you want to pay. He is only asking you to give him that much money. What would you do if a man came into your salesroom, if you were a dealer, and agreed to buy a car on condition that after he had paid for it you would hand him back about $200? You'd laugh at him. And yet, that is just what so many dealers do; they don't hand over the present in money, but they might as well do so, for when they take the old car in for $200 more than it's worth they not only lose that amount but have to store the old car for some length of time.

Defines One Form of Useless Giving.

"That sort of giving is absolutely useless. The man who buys the car wouldn't think any better of you if he understood what a fool business move you had made—and what does this giving get for you? Nothing at all. If you want to give something useful, give service; that counts. But if you give $200 uselessly to the man when he buys his car you can't afford to give him service which is a useful gift—and a necessary one.

"On the other hand, I don't want useless gifts for myself. When I do trade a car I trade in a businesslike way, so that I can't lose; but sometimes may gain a little—expenses, for instance. I don't ask the customer to trade in his car on such a basis that he is making me a gift of $200, and I refuse absolutely to give any such amount to him."

"Everybody knows that," interrupted the Sales Manager, "and if that's the only in-

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stance you can cite your claim to being the original Spug is——"

"But it isn't," came back Reilly. "I once thought that I didn't dare assert my rights in anything. If a man came in for repair work and the work really was worth a considerable sum I used to cut it away down in an effort to please him. It didn't pan out at that, and he generally kicked just as hard, if he was of the kicking kind. After I had thrown away a nice bunch of profits in useless gifts of this kind I decided that what I was entitled to I was going to have; I evolved a system that showed a man just what was done on his car, and that went into his bill. I used to give him what should have been my profits in an effort to keep him for a customer, but I made up my mind that if I couldn't make a profit on him I didn't want him for a customer. Giving away profits for such a purpose was more than useless—it was criminal! And, as in the other case, I do not want a man to make me a gift through an overcharge.

Giving Through Program Advertising.

"There are—I was going to say—a million other ways of parting with profits in the automobile business. One of the banes of the business man's life in our town is program advertising; it's been done to death. Every time any club, society, factory or even private party arranges a dance, a program is gotten up and the business men are besieged with requests that they buy so much space. Most of it is money thrown away. You practically give whatever amount you pay to those who get up the program, and give it uselessly in a majority of instances."

"I saw your 'ad' in a program last week," contradicted the Sales Manager.

"Sure! But what was it?" The Sales Manager said he didn't remember, but Reilly explained that it was a fraternal order affair. "In that case," he stated, "I considered the 'ad' well placed; it was seen by people, all of whom can afford to buy cars, and I didn't merely run a card saying my name is Reilly and that I am at a certain location. I ran a read 'ad' with a real argument. That particular expenditure I regard as being in a position to bring some return. But these dances that don't amount to as much as a man in a shopping crowd are easily within the useless gift class.

Discriminating in Charity Work.

"Charity is another thing. There are more kinds of charity than there are objects of charity. There isn't a week that I don't get a request to give somebody something. It isn't parting with the money that I dislike, but it's giving to anything and anybody that comes along under the guise of a charity worker. I make charitable contributions every year, but I like to know where they go and be halfway certain that they are going for a useful purpose.

"A dealer, also, can give away considerable in the course of a year in gasolene and general depreciation by giving useless demonstrations. There are people who hint around about liking the car and who drop little remarks that are calculated to make a dealer jump at the chance of giving them a demonstration. They're looking for a joy ride, that's all. If I believe I can sell a man a car by giving him a demonstration or can get a start toward a sale, I'll ask him myself to have a demonstration, or arrange in some way to give him one. Also, if a man is looking for a car he has no hesitation in asking for a demonstration, but these penniless would-be joy-riders are on my blacklist."

The Fallacy of Cheap Labor.

"Terribly stingy, aren't you?" suggested the Sales Manager.

"Yes," retorted Reilly, "systematically stingy, if you can derive any meaning from that. And here's another way: I once thought I could make more money by hiring cheap men, but I didn't labor long under that delusion. I can hire cheap men for about $2.50 a day in the shop. Good men cost $4 or $4.50. One day when I waked up to the fact that one good man can do almost as much as two cheap men and do it better, I began to weed out the cheap and unskilled men. I had been giving away 50 cents or a dollar a day to unskilled mechanics. I fail to see any usefulness in such gifts; it certainly was not useful to me—as I discovered when several jobs were botched.

"I used to give my customers a percent of my profits after gasolene started to go up. They had been accustomed to 18 cents a gallon, and when the wholesale got to 16 I kept the price at 18 until I discovered the profit was not paying for the handling. I raised. There was some objection, but those customers who are worth having were quick to see the justice of it when it was explained to them.

Service the Greatest Gift of All.

"There are so many, many ways, Jim, but it all amounts to using sense. I'll give service to the limit, and any other thing that a man is entitled to, but I won't make him presents of what he is not entitled to, and what he won't appreciate if you do give it to him. The most useful gift for any dealer is service, and it should be the kind"——

"Don't you think we'd better start, if we're going to get back there by the time our hour is up?" interrupted the Sales Manager, as he looked at his watch.

The two hurriedly picked up their bundles and departed. At the department store door a little man, also bundle-laden, was being inhumanly jostled in the Yuletide throng. The sight brought unpleasant remembrances. Reilly hesitated slightly. Then he pulled his hat on firmly with a half-free arm and, as he prepared to charge the crowd, half thought and half muttered, "Gee, but I hate to go back in there!"

Garage Owners Mulcted for Wrecked Car.

Deciding that Knight S. Jordan and Wilfred Walters, proprietors of the Alco Garage in Palo Alto (Cal.) did not exercise proper care in keeping an automobile which was taken without permission by an employe and wrecked by a freight train near Menlo Park, Judge J. E. Richards of San Jose has awarded Peter Mullen, the owner of the machine, damages to the extent of $900.

The garage proprietors sought to prove that on the night in question, August 17, 1911, the garage was broken into feloniously by certain persons who thereupon entered and took therefrom the automobile without the knowledge or consent of the defendants. The defense also contended that Mullen had not been damaged to the extent of $1,320 and that the machine at the most was worth no more than $800.

Washington Dealers Once More Organized.

To prevent a repetition of the occurrence of last year, when the Washington (D. C.) automobile show which was to have been staged in Convention Hall was "called off" at the eleventh hour, the Automobile Dealers' Association of Washington, Inc., has been formed, and will manage the exhibit which is slated for the week beginning February 3rd. The officers are: President, T. O. Probey; vice-president, Charles W. Semmes; secretary, E. A. Garlock; treasurer, F. C. Sibbald. The board of directors comprises Arthur Foraker, J. H. Miller, I. J. Henderson, J. H. Earle, R. B. Emerson.

Cobb Heads Fresno Association.

The Fresno Automobile Dealers' Association has been formed in the California city of that name, with these officers: President, Charles H. Cobb; vice-president, George S. Waterman; secretary, Ernest Johnson; treasurer, C. W. Hobson. The executive committee comprises: C. H. Cobb, C. E. Gray, G. S. Waterman, J. F. Gurley, H. B. Odell, W. Scott, Ernest Johnson. Twelve dealers are enrolled in the organization

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Hot Water Not Good for Car Washing.

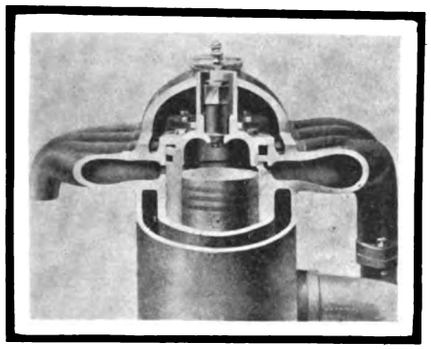
Water that is actually hot should never be used for washing a car; the water should be merely tepid. Hot water has a deteriorating effect on the varnish of a well-finished body.

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ACQUIRES RIGHTS FOR SWISS "POPPET-VALVELESS" MOTOR

Fisher Engine, Renamed "Magic," to be Controlled by New York Company—Employs Sliding Crescent Valves.

Although it has been known ever since the organization several months ago of the Motor Gear & Improvement Co. of New York City, that a new type of poppet valveless automobile motor shortly was to make its debut into American circles, the motor itself has been more or less hedged about with mystery, and the fog of uncertainty regarding its construction and operation was dissipated late last week by the reading of a paper before the Detroit Section of the



SHOWING SLEEVES AND PORTS

Society of Automobile Engineers by Lewis B. Brown, president of the company.

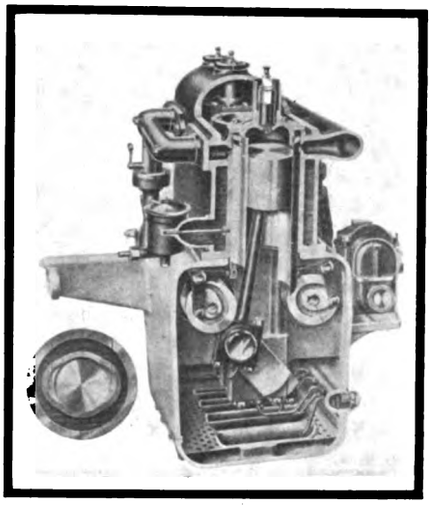
American Rights to Fisher Motor.

The motor, it transpires, is none other than the Fisher, which for some time has attracted attention abroad, principally in France, where it recently was put through a comprehensive test by the Automobile Club of France, subsequent to which it was illustrated and briefly described in Motor World for October 10th. The Motor Gear & Improvement Co., which is located at 250 West 54th street, New York City, has obtained the American rights to manufacture the engine, which is the invention of Martin Fisher, of Zurich, Switzerland, and which in America will be styled "Magic." The company was incorporated in September with $1,200,000 capital, with Lewis B. Brown and Dwight Partridge as president and treasurer, respectively, both of whom are intimately connected with the Aristos Co. Ralph Pulitzer, chief owner of the New York World, is one of a number of prominent stockholders whose names have not been divulged.

Prior to the reading of the paper in which the construction and characteristics of the motor were made plain, a convincing demonstration of its capabilities was given a number of prominent automobile engineers, among whom were Howard Coffin, chief engineer of the Hudson company, under whose guidance subsequent laboratory tests were made; F. H. Baker, of the Atlas Engine Works; J. Heinze, chief engineer of the Northway Motor Co.; C. C. Hinkley, chief engineer of the Chalmers Motor Co., and a number of others.

Marked Flexibility Shown in Test.

The motor, which, as may be seen by the accompanying illustrations, is singularly clear of projections and presents an unusually plain exterior, was demonstrated in a chassis from which an ordinary poppet valve motor had been removed. The chassis mounted a six-passenger touring body



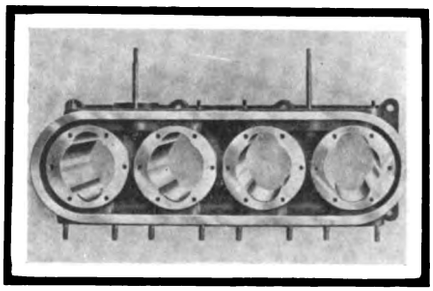
MAGIC MOTOR IN SECTION

weighing complete 3,000 pounds, and it appeared to the Motor World man who was present at the demonstration that the motor is extraordinarily flexible, had unusual accelerative powers, is free from vibration at speeds up to 50 miles an hour, and that it has pulling powers which might not be suspected from an inspection of its comparatively small size. The latter feature is amply borne out by the results of the laboratory tests, in which it was shown that the horsepower curve ascended in an unbroken line up to 2,000 revolutions a minute and that the power developed was in direct proportion to the speed up to 1,500 revolutions. In gasolene and oil consumption it was no less remarkable, 160 miles to the pint of oil and 20 miles to the gallon of fuel being obtained; the records are based on an extended run of some 11,000 miles.

In general constructional details, the motor partakes in a measure of the features of the Knight motor and is not unlike Miss Margaret Knight's K-D crescent-valve engine, which made its appearance at the Boston show last March. Its resemblance to both these motors ceases, however, with the fact that it employs sliding sleeve valves. They are neither concentric with the piston nor do they entirely encircle the piston. Instead, they are crescent-shaped and, strictly speaking, are eccentric to the piston, the construction being made plain by the accompanying sectional pictures.

Sleeves Operated by Box Cams.

The crescent-shaped valves are let into the cylinder walls on either side of the piston, each taking up about 69 degrees of the wall circumference. Another peculiar feature of the motor is the method employed to impart the proper motion to the sleeves. They are actuated by means of box cams, thus ensuring positive motion in both directions and eliminating the necessity for springs. The cams themselves are actuated by means of Coventry "silent" chains much after the manner employed in driving the eccentric shafts of the Knight motor. The



TOP VIEW OF CYLINDERS

slides, which are of cast iron, extend the whole length of the cylinders and continue about two inches below them for connection to the actuating mechanism. At their upper extremities they are slotted, the slots registering with ports in the detachable cylinder heads leading to the intake and exhaust passages.

Advantage Claimed for Construction.

Like the Knight motor, the combustion chamber is sealed by means of a wide "junk" or "bull" ring in the cylinder heads. The length of travel of the sleeves is one-half inch in each direction, and it is pointed out that the use of the box cam mechanism instead of eccentric drive permits the valves to function much after the manner of the valves on a poppet valve motor which permit a characteristic "dwell" after the closing of the ports, the result being that the sleeves are stationary during the compression and explosion strokes. Cylinder heads are detachable.

Despite the fact that the bore and stroke of the motor are but 3 5/16 and 4¾, respectively, or, to be more exact, 85 mm. and 120 mm., the power developed by the engine at 1,000 revolutions a minute is 18 horsepower, whence it increases steadily up to

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35 horsepower at 1,900 revolutions. The actual power developed, therefore, exceeds the S. A. E. rating by approximately 140 per cent., as against the usual 120 per cent. fairly common with poppet valve motors.

In explanation of the unusual power development, it is pointed out that the compression space is but 18 per cent. of the cylinder volume and that the compression is correspondingly higher than that of a poppet valve motor. Pre-ignition is avoided, it is explained, by reason of the symmetrical shape of the combustion chamber and the fact that the maximum possible proportion of it comes in direct contact with the cooling water.

In general construction, the Magic motor is of the block type. It is sparked by a high tension magneto and cooled in the orthodox manner on the thermo-siphonic system. Lubrication is effected by means of a combined splash and force feed system in which the pump forces the oil direct to the main bearings, whence the overflow drains into troughs beneath the connecting rod big end bearings and keeps them full. Scoops on the connecting rods convey the oil to the connecting rod bearings and splash the lubricant onto the cylinder walls and sleeves, whence the excess is drained back into the sump, to be re-circulated by the pump.

Softening Clamps Hardened by Use.

Copper and brass vise clamps, intended to protect finished metal surfaces from injury when held in the vise, are apt to become hardened from constant use, and therefore occasionally should be softened by being heated to a dull red and quenched in water. The heating alone will make the metal soft, but the quenching helps the process slightly.

FRANKLIN SERIES THREE HAS ELECTRIC STARTERS

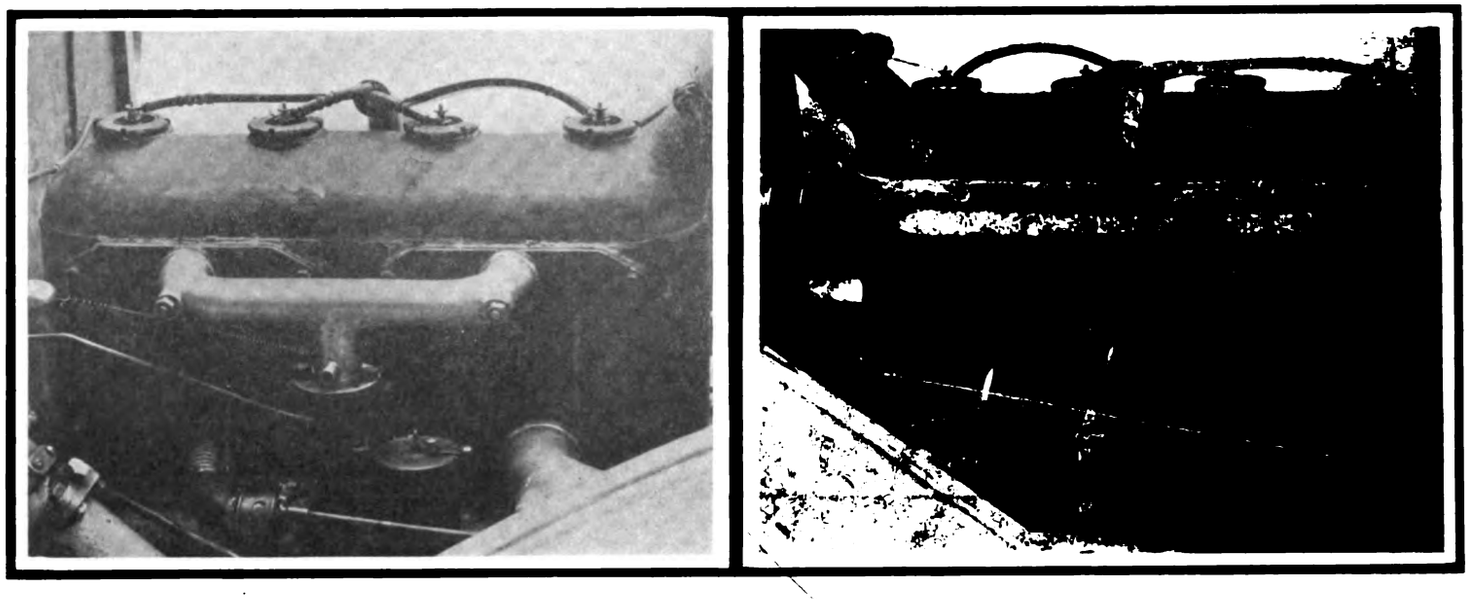
Entz Lighting and Starting System Adopted for Six-Cylinder Models —No Other Constructional Changes.

Except that a complete, self-contained electric lighting and engine starting system has been added to the equipment of the six-cylinder "series three" Franklin cars that now are coming through the factory of the Franklin Automobile Co. of Syracuse, N. Y., and which are worthy successors of the "series two" cars that preceded them, very few alterations in either design or construction have been made. Another addition to the equipment is a Warner speedometer.

The lighting and engine starting system that has been adopted for a place on all Franklin six-cylinder cars is the Entz, which in its simplest aspects—and there can be no doubt that it is simple—consists of a combination motor-generator, a Willard storage battery of liberal capacity and a single switch which serves also as an ignition switch. In fact, it is because this one switch serves a dual purpose that the electrical equipment may be—and is—simple, for by reason of the connections it permits, it has been found possible to eliminate all mechanical regulating devices, to say nothing of the automatic cut-out that generally is employed between the generator and the battery.

The motor-generator unit is permanently and positively connected to the gasolene motor eliminating gears and, as it operates alternately as a motor and a generator, according to whether it is driven or is driving, it is merely necessary to turn the ignition switch to the "on" position to start the engine. The single action breaks the magneto short circuit and connects the battery to the motor-generator in one operation. Similarly, turning the ignition switch to the "off" position simultaneously short-circuits the magneto and breaks the connection between the motor-generator and the battery. As there is no automatic cut-out between the motor-generator and the battery, if the motor is throttled down to the speed where it ordinarily would stall, the electric unit automatically becomes a motor by reason of the slow rotative speed of the armature, and, drawing current from the battery, assists the gasolene engine or automatically starts it. Under normal touring conditions, the motor-generator changes the battery against its future use.

The series three line, complete, consists of two-passenger victoria-phaeton and five-passenger bodies mounted on the "Little Six" chassis, four-passenger phaeton, five- and seven-passenger touring bodies mounted on the "thirty-eight-six" chassis and two four-cylinder chassis mounting roadster and five-passenger touring bodies.



INTAKE AND EXHAUST SIDES OF MAGIC CRESCENT VALVE MOTOR AS IT APPEARS IN CHASSIS

Handy Chuck, Economically Made.

A fairly good chuck or holder for drills, taps or the like can be made by drilling a hole in the threaded end of a bolt, lengthwise, splitting the bolt for about an inch and a half by two hacksaw cuts at right angles to each other, and shaping the other end of the bolt either to go into the spindle of a lathe or drill-press, or to take a tap-wrench. The drill or other tool to be held is placed in the hole, which should be a shade smaller than the tool, and the nut screwed up toward the end of the chuck.

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EMPLOYING QUICK WIT IN PROSECUTING SALES

Brooklyn Dealer Exemplifies the Sort of Emergency Work That Is Not Founded on Prearranged Arguments—Two Sales, Made by Spur-of-the-Moment Methods—"Cuss Words" That Helped.

Approaching the prospective buyer of an automobile is one of the vital points in motor car salesmanship, and in schools where the merchandising of cars is taught, the student is given the rudiments of sales openings as best the instructor can teach him; but the instructors, themselves, are only too well aware of the fact that unless a man has the qualities of salesmanship within himself he never can aspire to be much more than a mere order taker.

Planned and Extemporaneous Argument.

Whether a line of talk or argument, carefully prepared in advance, is advantageous in approaching a prospective purchaser is a mooted point; everyone concedes that the salesman ought to be able to keep up his end of the conversation but supposing the prepared campaign does not fit in with the turn conversation actually takes — what then? At this point the manufactured salesman fails; the salesman with inherent qualities takes the situation in hand on the spur of the moment—and wins. Adopting a baseball term, he might be termed a "pinch-hitter."

That preparing a line of talk in advance is poor policy is a radical statement, but that he can do better without such a plan is the declaration of Joseph D. Rourk, who deals in Haynes cars at 1001 Bedford avenue, Brooklyn, N. Y. Rourk is an excellent example of the salesman with mental ability; he might be called a man with wits—a "pinch-hitter." He has ideas of his own about selling, and his ideas may be said to develop automatically as occasion demands. His peculiar makeup in this respect has consummated many sales, and each time his mental ability is left to extricate him from a tight corner it seems to become more efficient. Rourk has little faith in the salesman who learns his song by heart and when he has finished it has no more to say—unless he starts at the beginning and recites the oration again.

Prospect Who Wanted Too Many Rides.

A sale that Rourk once made is illustrative of strenuous salesmanship in a tight corner, and it also is a method, Rourk himself says, that probably would result in failure 999 times in every 1,000. The prospect in this case was a physician, and Rourk had been trying to sell him for some time. Demonstrating had become so frequent that Rourk was beginning to wonder who owned the car—himself or the prospect. One wintry morning, when the snow was deep on the ground the physician telephoned to Rourk and said, "I have to go out to the King's County Hospital this morning. If you want to give a demonstration you can take me out."

Street car traffic was in bad shape from the snow, and Rourk mentally was perturbed when the doctor's proposal began to sink into his mind. The dealer had about given up selling the car, and then to have the prospect work him for a demonstration and on such a morning did not line up well with his ideas of salesmanship. But he smothered his wrath and cranked up the car.

Rourk Tries Radical Salesmanship.

When Rourk stopped in the snow in front of the physician's residence and the latter climbed in Rourk suddenly determined to cast all mild forms of salesmanship to the winds and try a new sort. He considered the sale as good as lost anyway, so grabbed at this last straw as a surgeon resorts to a dangerous operation as a last resort. The doctor was hardly seated when Rourk said, "Doctor, you're a damned fool!"

This floored the physician and he attempted to reply; but before he could get his conversational apparatus in operation Rourk followed up his bomb-like statement with the assertion, "I also think your're a damned fourflusher!"

Unusual Method of Arousing Interest.

The physician was almost in the sputtering stage by this time, and as he tried to expostulate Rourk added: "You don't want to buy a car. What you want to do is to go along the row and get two or three demonstrations from each dealer, and that will take you over into next year. Then the new cars will be out and you can start all over again; you don't want to buy a car; it's a waste of money. After all the rides you've had in this car, I call it downright presumption for you to ask me to drive you out to the King's County Hospital—three miles and back—on a day like this."

The physician was taken aback but did not become over-angry, and endeavored to assert that Rourk's conversation was not at all proper.

Demands Look at First Payment.

"I don't believe you've got money enough to make a deposit on the car," continued Rourk. "But I'll tell you what I'll do. I'll drive you down to the bank, and if you can show me you even have enough to make a deposit I'll drive you out to the hospital and never say another word. I don't ask you to pay me the money; just show me you've got that much. What bank is your money in?"

The physician named a bank; Rourk started the car and drove to the bank. The physician went in and in a few minutes returned with $200—the required amount. He handed it to Rourk, who calmly took the roll and counted it to see if there really was $200 in it. He handed it back to the physician, who pocketed it, and started to climb into the car. "Aren't you going to put it back in the bank?" asked Rourk.

"No, I guess not," replied the physician.

"King's County the first stop?" asked Rourk in a semi-genial tone, as the two started out again.

"You might stop at the house first," replied the physician, and when the car reached his residence he said, "Won't you come in the house a minute?"

Why the Method Was Successful.

Rourk went in and, to his surprise, the physician signed a contract then and there and paid the deposit. The trip to the hospital was made with Rourk as driver, but the car was the physician's. The doctor has been one of Rourk's best friends ever since. He even tells the story of how he bought his first car and laughs with his hearers. He says that when Rourk began to express his private opinion to the doctor's face the latter thought in this wise: "If Rourk is truthful and honest enough to tell me what he thinks of me, right to my face, instead of going behind my back to do it, he must be pretty square, and therefore what he has said about the good qualities of his car must be true."

It was strenuous salesmanship that would fail in almost every instance, but it illus-

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trates the kind of spur-of-the-moment generalship that overcomes a trying situation. All of Rourk's carefully planned sales talk had gone for naught; he says such talks do not ring true, anyhow.

Grabbing a Sale from the Fire.

On another occasion a man whom he knew well and who he thought might some day purchase a car went across the river to New York to buy a $4,000 car. Rourk learned of his intention 40 minutes after the man had left Brooklyn. The dealer had believed all along that when the man was ready to buy a car he would at least give him a look-in. He first telephoned the man's residence and verified the "tip" that the man was in New York to place his order.

Action had to be quick. Rourk got the New York salesrooms in question by telephone and asked if Mr. ——— was there. They did not know. Rourk then described him, and the person at the other end said there was such an appearing man there. Rourk asked that he be called to the telephone, and said: "It doesn't make any difference to you whether you close that deal to-day or to-morrow, and I've a proposition I'd like to make to you before you buy. Better drop in and see me." The man said he would.

He came sooner than expected, turning up with his chauffeur in about a half hour. He was none too cordial when he entered, whereas he always had been very friendly before, and to get him and the chauffeur to sit down, Rourk having exhausted all the salesmanship he possessed, was compelled to ask the two point blank to have chairs. When they were seated Rourk was still at a loss as to how to act. He opened up by asking the chauffeur what he thought of the A——— car. The chauffeur named an objection. Rourk then asked the driver his opinion of the B——— car, and the C——— car, and the D——— car. Each time the chauffeur named an objection, and also named one in the E——— car—the one his employer had started to buy.

Closes Deal Without a Demonstrator.

Rourk had not even a demonstrating car in the place, but after he had gone through the list of high priced cars and the chauffeur had named an objection to each one, Rourk picked up a catalogue and said: "I'll defy you, or you," and he pointed his finger at driver and employer, "to find any of those faults in this car." The man leaned back in his chair and smiled. He also signed a contract which Rourk laid on his desk in front of him. He promised to make the deposit the next day, but by taking the two home in a little old car he had in his repair shop Rourk managed to get the deposit the same day. His emergency work had earned him $500 or $600 in less than an hour.

Everyone in Rourk's employ seems to have absorbed these emergency-meeting methods. One day the wife of a prospect on whom Rourk had worked for two years telephoned and asked to have Rourk call. Rourk was out of town and would not be back for several days, and the office girl realized that waiting might lose a sale. She hurried a salesman to the residence in question and he sold a car. Also, this salesman is a very busy man. As Rourk expressed it, "I make the balls and he shoots 'em."

Prospective Buyers Followed Months.

It is nothing in the Rourk establishment to follow up a prospect for months or years, if he looks good; but if investigation shows there is practically no chance of "selling him" he is dropped. Also, men who literally slam the door in a salesman's face are left alone unless future developments warrant action.

One man who at present is regarded as near the buying point has been handled as follows: "Asked for catalogue November 15, 1911; mailed catalogue November 16, 1911; called at house with car January 3, 1912; gave demonstration January 20; telephoned him January 24; called at store January 25, not in; telephoned him January 26, said he had just invested some money and would see Rourk at Brooklyn automobile show; telephoned prospect's son March 20, said father was trying to get more than $800 for old car; telephoned him March 25, said he had no ready money; telephoned him August 29 to tell him new cars were in; demonstration September 11, pleased; telephoned him September 12, said he would have money later, and it is thought he will surely buy in the spring." All this is contained in a card index, which is an important item in Rourk's selling system.

Even Present Owners Not Forgotten.

Prospects who buy other cars are left alone for a time.

"If a man buys a car for about $1,000," said Rourk, "I leave him alone for a year, as I consider he will want a new car about that time. If he has bought a $2,000 car I give him two years before he considers he has got his money's worth and thinks he can afford a new car--but we never lose track of a man unless he gives us to understand that he wants to be let alone. In that case we do our best to accommodate him."

Most prospects are gained through owners of cars Rourk has sold. Although he admits the value of advertising, he says he does not think it would pay him. He says he can trace 90 per cent. of his sales to former owners, thus leaving but 10 per cent. to other sources, and since he sells 75 or 85 cars a year he says he does not think the increase from advertising would bring a just return. Some newspaper advertising of Haynes cars has been done in Brooklyn, but Rourk says he never has been able to trace a sale to it.

Rourk's Policy of Advertising.

"Anyone will concede that advertising helps," said Rourk, "but the question in my case is, Does it pay? I could spend $50 a week for three months and I do not think I would get my money back. What would pay in my case, if anything would bring a return, would be a small ad run every day. A big ad run once a week is not of much value to me; a man looks at it and throws it away without reading it. If a small ad is used every day it gradually forces itself upon the attention of the reader."

On the used car proposition Rourk follows that sensible plan which, all other things aside, seems to be one of the greatest advantages to the dealer. He trades, but allows prices which he is quite sure will permit a slight profit on the re-sale, rather than a loss. Throwing away profits through trading, he says, is doubly damaging, because it does not permit the rendering of service, and service, he rightfully says, is the backbone of the business.

He is about to move from his present location to 1170 Bedford avenue, which is more within "automobile row." He used to be in the row, but it has moved away from him. When asked his new number, however, he hurriedly looked at his lease and said: "This is the first time I happened to think of it, but, thank heaven! it's 1170. I though first it was 1192, and 9 is my hoodoo number. I never took out a car yet with a number 9 on it that I didn't have bad luck. Thirteen is my lucky number. I've won contests with it and always have good luck with it. In fact, it's such a good number that I signed my lease for the new place on Friday, the 13th of December."

Disapproves of Evening Calling.

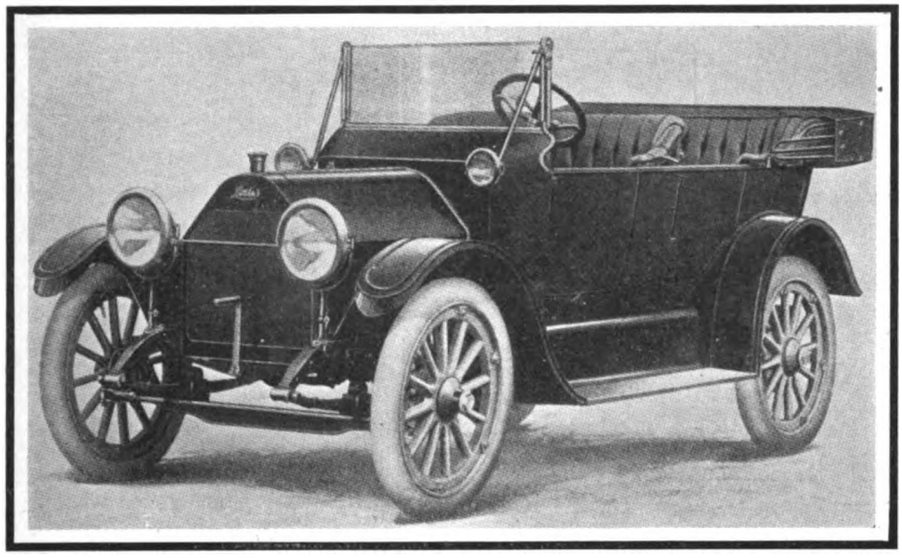
One thing of which Rourk does not approve is calling on a prospect in the evening, he says it never has gained him good results. He believes there are many men like himself, who prefer to do their business at their stores or offices. His theory in this respect is that the business man, when he gets home at night, likes to enjoy a quiet evening, and Rourk appreciates the feelings of such a man when his evening is broken up, for Rourk himself is one of the quiet-evening type.

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LITTLE "SIX" LITTLE IN PRICE BUT BIG IN VALUE

Lowest Priced of all the "Sixes" Has Unusual Features—Sells for $1,285 Completely Equipped.

Having "felt out" the market with the aid of its "Little four," which now has been on the market for the better part of a year, during which time it has made quite a name for itself, the Little Motor Car Co., of Flint, Mich., which, with the Chevrolet Motor Car Co., of Detroit, is under the guiding hand of W. C. Durant, has brought its "six" to the state of perfection where it is ready for the market, and the additional



LITTLE "SIX" TOURING MODEL WHICH SELLS FOR $1,285

details regarding its design and construction which now are available reveal that it is virtually a smaller edition of the first of the Chevrolet "sixes" placed on the market simultaneously with it. It is a well-designed car, built in but one touring model, that sells for the unusually low price of $1,285, despite the fact that it is fully equipped.

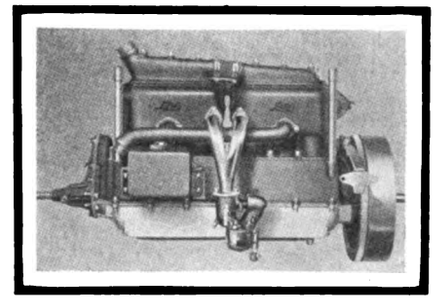
As is but natural, in view of the close relationship between the Little and Chevrolet companies, the motor in the Little "six," which is little in name only and really is an average sized and commodious touring car with seats for five persons, bears striking resemblance to the Chevrolet motor. It has the same peculiar type of semi-circular counterweighted crankshaft, for instance, which is said to be the principal reason for the smooth operation of the Chevrolet motor, and its other features are much the same. The cylinders are cast in blocks of three though they are of the L-head type with valve mechanism carefully enclosed by means of light removable metallic covers. The bore is 3 5/16 inches, 4/16th less than the Chevrolet, and it employs the same type of domed pistons; the stroke also is somewhat less—namely, 4¼ inches—though this motor, too, is of the long-stroke type.

Connecting rods are drop-forged I-beam in section and operate in die-cast babbitt bearings, as does the crankshaft; bearings in each case are more than ordinarily liberal and provision for taking up wear is made. The timing gears are of the helical type and operate in oil, though the motor lubrication system is slightly different from that employed in the Chevrolet motor and operates on what is known as the vacuum principle. That is to say, the oil level in the crankcase automatically is maintained at the same height by the uncovering of a port as the level drops. The oil enters the crankcase by gravity until the port is covered, when the vacuum in the reservoir is sufficient to stop the flow until more air is permitted to enter the reservoir through the port. Ignition is effected by means of a special high tension magneto and the carburetter is exhaust heated and thoroughly automatic. Thermo-siphon cooling is employed, aided by a belt-driven fan.

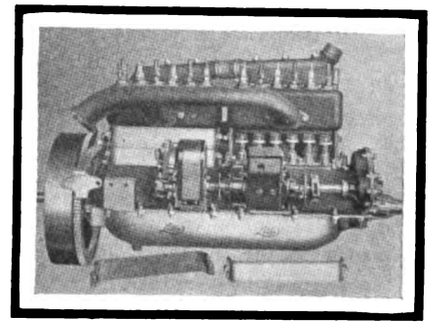
For lighting purposes, a complete dynamo electric system is supplied as regular equipment, the dynamo being mounted on the engine on a special bracket and driven by a straight-through shaft from the timing gear train to the magneto. At the option of the purchaser the equipment will be made more complete by the addition of a Gray & Davis electric starter, though its specification slightly increases the cost.

The clutch is of the leather-faced cone variety and is fitted with adjustable compensating spring inserts to ensure smooth action without gripping or slipping; it is 15⅛ inches in diameter. The gearset is of the selective type and provides three forward speeds and reverse, obtained with the usual hand lever located in the center of the footboard. The steering wheel is located at the left side with the emergency brake lever, which is of the same cranked type used in the Chevrolet, located at the left. Its position, however, and its construction are such that the left side front door is not obstructed. Similarly, the gear shift lever is placed as close as possible to the seats in order not to obstruct the right door.

The chassis frame is formed of pressed steel and is supported in front on wide semi-elliptic springs and in the rear on practically the same type of three-quarter platform springs as are used in the Chevrolet car. The rear axle is of the semi-floating type and the front axle is drop-forged I-beam in section. Two independent sets of brakes are supplied, both internal expanding in Raybestos lined drums 12 inches in diameter and both carefully equalized. The service set is operated by the usual left pedal and the emergency set is operated by hand lever. Wheels are of the artillery type with twelve 1⅜-inch spokes in front and rear and the hub flanges covered by shields. The wheelbase of the standard model is 106 inches on either 56 or 60 inches tread, and the wheels are shod with 32 x 4-inch tires.



INTAKE SIDE LITTLE "SIX"



VALVE SIDE, SHOWING DYNAMO

Like the Chevrolet, the Little "six" is completely equipped, the equipment including tailored mohair top with envelope and side curtains, windshield, speedometer, demountable rims, tire carriers at the back of the tonneau, dynamo electric lighting system, electric horn, and tools, etc.

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Solutions of The Used Car Problem

In Competition for Motor World's Cash Premiums of $50, $25, $15 and $10 for the Best Four Articles Dealing With the Subject.

(Owing to an influx of "Solutions," received just prior to the closing date of this contest—December 16—it will not be possible to print all of them in season to permit of their being turned over to the three judges on January 2d, as first announced. The date for such action is therefore extended to February 6th.)

By FREMONT D. PALMER, New York City.

The used car problem interests both manufacturers and sales agencies as never before, due possibly to the stockholders of different organizations being confronted by the terrible losses sustained during the current year instead of the promised dividends. And all because these same companies have been carrying traded in or second-hand cars as assets at fictitious values.

For various reasons the majority of sales agencies attempt to handle the sale of the traded-in car in conjunction with that of the new one—that is, the same salesmen, generally on a commission basis, is permitted to place the value of the car offered in part payment for the new model—and he waxes eloquent as he works hard—possibly harder—with the management than with the customer to put over the deal which means a few dollars in commission to him and later a loss to the people who harbor him. The car traded in is then placed with others of its kind for sale in some remote part of the building, in competition, where the best and easiest scellers are picked out by the same salesmen, the junk being allowed to accumulate. Here its value rapidly decreases, though on the inventory it remains at a prohibitive figure as an asset, until the crying need for operating cash becomes so insistent a number of these derelicts are bunched and turned over to the professional dealer in second-hand cars at his price, and here vanishes the season's profits.

A few progressive dealers are meeting these conditdions in the proper manner and are not worrying about the future, by maintaining a used car department. And in order to make a used car department wholly successful, it must be entirely separated from the new and its business treated as it deserves to be treated, i. e., with proper consideration.

A capable manager should be fully entrusted with the task of passing on the value of the car offered in exchange. According to his judgment he should put it in condidtion for sale and market it. I cannot understand why more manufacturers do not realize the immense advertising possibilities in the guaranteed factory overhauled used car. Is it lack of confidence in their product that they fear to perpetuate an old model? Or do they think that their duty to their trade ceases on the delivery of the new car?

Why isn't protection to the trade, protection and advertisement to the manufacturer and dealer? How does the individual owner feel when he drops in to look over the new model and casually asks what he will be allowed for the car which he has used but a few months, and is blandly referred by the salesman to some one of the numerous second-hand dealers, who in turn informs him that the car has deteriorated 75 per cent., this in less than one year?

It is not very much of an incentive for him to purchase another of the same make—is it?

And yet 90 per cent. of those who are in the market for second-hand cars prefer to buy of the factory or its representative, and are willing to pay a reasonable price under such conditions as inspire them with confidence.

Here, then, is the solution of the used car problem:

A well organized used car department, with an efficient force of mechanics.

Allow a reasonable amount for the car offered in trade; replace the worn parts with new at cost and actual cost of mechanics' time, and painting it if necessary.

It has then an actual value of not less than 65 per cent. of its original cost and it will bring the price and a profit instead of loss.

By this method the manufacturer can soon control the market valuation of his own products, and the sale of them to the discomfiture of the second-hand dealer who is actually undermining the industry by his more or less unscrupulous methods.

By A. E. GADBOIS, Montreal, Canada.

As a dealer I would suggest as a solution of the used car problem, that an agreement be made at once by all the big companies of motor cars, the agreement to be as follows:

1. Appoint good agents with good standing and good backing.

2. Accept as agents only those who will guarantee not to take a used car in exchange for a new one.

3. Have the N. A. A. M. require a bond of $5,000 on every said agent so to be sure that he will fulfill his promises in this respect.

4. Have the premium paid by the maker or dealer.

If the man who has a certain make of car and wants to change it for a new one, sees that he cannot get rid of it through an agent because they are all combined, he will have to sell it at its real price to his brother or friend or elsewhere, then you will have the used car problem solved.

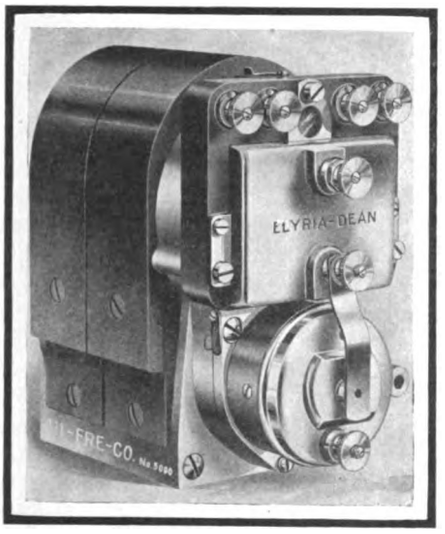
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HIGH FREQUENCY IGNITION MARKS RADICAL DEPARTURE

Employs Low Tension Magneto and No High Tension Current is Carried by Wiring—Dean's System Made Ready.

When Nikola Tesla first became interested in matters electrical and some years ago developed what has come to be known as the Tesla coil for the generation of high frequency currents, he discovered, among other things, that high frequency current has a number of characteristics that are peculiar to itself and that are readily adaptable to commercial uses.

Latterly, it was demonstrated that its peculiarities make it particularly advantageous

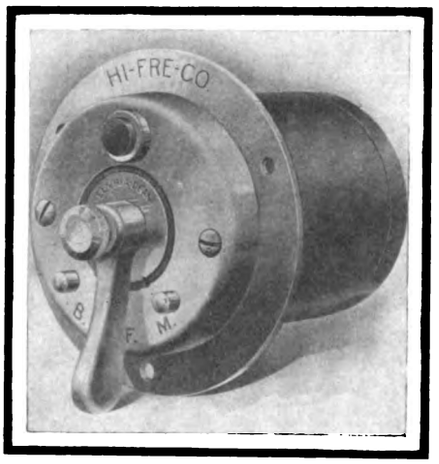


HI-FRE-CO LOW TENSION MAGNETO

for ignition purposes, as was pointed out in a paper which was read by Ray H. Manson before the last meeting of the Detroit Section of the Society of Automobile Engineers, reproduced in extract in Motor World for November 28th, and which proved the forerunner of formal announcement to the effect that the Dean Electric Co. of Elyria, O., had acquired the right to manufacture ignition apparatus of the kind.

Strictly speaking, the application of high frequency current to ignition apparatus is not new, as was explained by Manson in his paper. To refresh the memories of those who may have forgotten it, it was developed about seven years ago and was produced in limited quantity by a California company. This is the first time, however, that any concerted effort has been made to introduce the apparatus generally and in quantity, though in taking up its manufacture the Dean company will in no whit curtail its production of Tuto and Rexo horns, its new speedometer and the Elyria-Dean electric lighting and engine starting system or the Otho lighting and starting system, the manufacturing rights for which recently were acquired.

The essential difference between the orthodox high tension ignition apparatus generally familiar and the high frequency apparatus which is produced by the Dean company is that in the latter no high tension magneto is used. The magneto is of the plain low tension type and, as the current which is led to the spark plugs is of the low tension variety, it may be appreciated there is considerably less likelihood of leakage and that the danger of painful, if not harmful, shocks received in handling the plugs and wiring is eliminated.



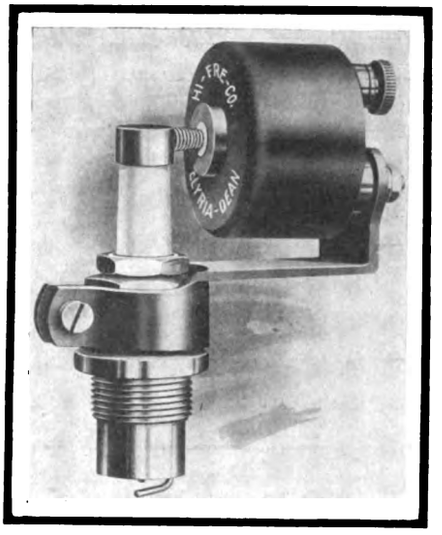
SWITCH AND "KICK" COIL

From the low tension magneto distributer, wires lead directly to miniature Tesla transformer coils, otherwise known as resonators, which are placed directly on the spark plugs, to which they are connected by means of extremely short wires, as shown by the accompanying illustration. The purpose of the resonators is to transform the low frequency discharge from the condensor in the magneto into a high frequency discharge with oscillations approximating 1,000,000 a second; in other words, the resonators "step up" the current from low tension and low frequency to high tension and high frequency.

It is in the "stepping up" process that the current takes on the characteristics which have proven so valuable for ignition purposes. The appearance of the spark that is produced across the spark gaps of the plugs, for instance, is comparatively thin and blue and is in marked contrast to the thick, yellow "flame" generated by the ordinary high tension magneto. Despite this fact, however, its igniting properties are every bit as good as the igniting properties of the plain high tension magneto spark and in certain instances are claimed to be better. In explanation of this seeming paradox, it is pointed out that the high frequency current throws off invisible rays, much akin to X-rays, which are particularly operative in causing the ignition of gas under pressure. Incidentally, as the length of the spark governs only slightly its efficiency in igniting the charge, it makes little difference what the length of the spark plug gap may be within limits up to approximately 1/32 of an inch.

As a further advantage of the high frequency spark as against the high tension spark, it is pointed out that the disruptive discharge of the former tends to prevent fouling or accumulations of carbon on the plug points and also ignites poor mixtures, whether too lean or too rich in gasolene, with greater facility.

The resonators themselves, which virtually are the heart of the system, consist of 1,200 turns of very fine wire, No. 36,



PLUG RESONATOR IN PLACE

placed on a spool without a magnetic core. Over the secondary or fine wiring there is placed a primary consisting of 7½ turns of very heavy wire, No. 19. They therefore virtually are miniature induction coils without the core and circuit breaker that has served to familiarize the induction coils used for ignition purposes. After the winding is complete, the whole is treated with high resistance, heat resisting varnish. The resonators then are encased in a tough moulding composition which is heat, moisture and oil proof, making them practically indestructible and well-nigh inderangeable, to coin a word. Still, should they become broken, it is a simple matter to replace them, spare resonators being carried for the purpose. Incidentally, it is advantageous that the derangement of one resonator does not effect the others.

Altogether, there are three types of Hi-Fre-Co apparatus produced: the magneto system described, a dual system employing

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a dash "kick" coil and battery as auxiliary for starting, etc., and a straight battery system employing the dash "kick" coil and switch and a separate distributer. The coil that is used with the dual and battery systems is exactly similar to the coil commonly used for low tension ignition and gas lighting work. It consists merely of a number of turns of fairly heavy wire over an iron wire core. It is incorporated in a casing which serves also to mount the switch and occupies a place on the dash, appearing much the same as the ordinary high tension system switch. The switch serves merely to short-circuit the magneto, as is the case with high tension systems, or to break the battery circuit, as the case may be.

High Court Favors Taxicab Operators.

Upholding the decision of the Supreme Court for New York county, the Appellate Division on Friday last, 13th inst., declined to grant to the American Taximeter Co. an injunction pendente lite against John Hefferon and John Kavanaugh, operating as the Circle Taxicab Co., and the International Taxameter Co., restraining the taxicab men from buying or using International meters and restraining the International company from selling meters to the taxicab men.

The American's case was based upon a contract made with Hefferon and Kavanaugh whereby they agreed to rent taximeters of it for three years at $6 a month per meter, and to use no other meter during that time; the company claimed, however, that the taxicab operators had violated the terms of this contract in using the International's meters and asked a restraining order to be made effective during the trial of the action.

The taxicab men claimed that because of a delinquency in paying rental on the meters the American company had refused to supply them with a sufficient number and that, since the city ordinances require some form of meter equipment, they had been obliged to use the International's. The lower court, whose decision was upheld, refused to grant the injunction, declaring that such an action would practically put Hefferon and Kavanaugh out of business during the suit, and that the taximeter company could have resorted to civil proceedings as a method of rental collections.

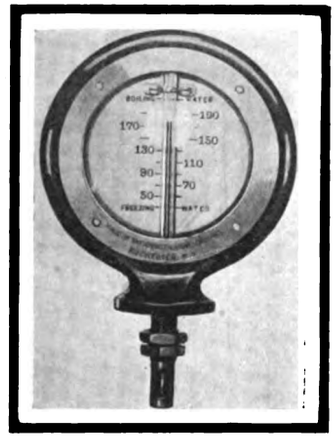
Labor that Does Damage to Motors.

A motor should not be permitted to labor, even if it can be kept going. When running very slowly the sudden blows of the explosions, acting against the resistance of the slow moving crankshaft, set up tremendous stresses that are as dangerous as they are unnecessary.

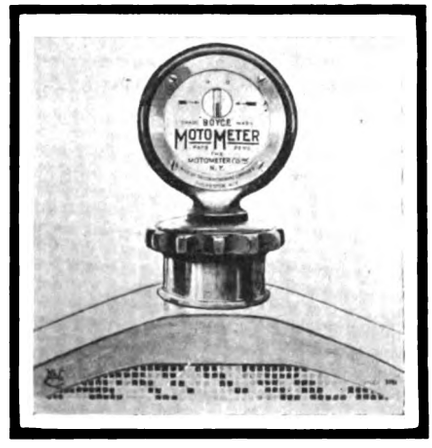
TAKING THE TEMPERATURE WHILE THE MOTOR RUNS

"Feeling the Radiator" Eliminated by an Ingenious Thermometer — Looks Like a "Mascot" and May Prove One.

One of the things that not infrequently causes the brow of the automobile driver to wrinkle with anxiety is the temperature of his motor and its cooling water, particularly when driving under conditions that are such as to produce heating tendencies. It is a nuisance to have to get out and feel the radiator; but it is anything but desirable to wait until overheating is indicated by a whiff or two of "high-temperature smell" from under the hood, or an unusual temperature rise by the actual boiling of the water, and an instrument that will indicate the condition of affairs, so far as heat is concerned, as does the appliance shown in the accompanying illustration, is a distinctly useful addition to the equipment of a car with a water-cooled motor.



MOTO-METER SCALE



REVERSE SIDE OF MOTO-METER

The motometer, as the instrument for indicating the temperature of the motor is called, just has been introduced by the Motometer Co., Inc., of 1784 Broadway, recently incorporated under New York laws. George Townsend, 2d, a well-known amateur racing driver who, however, has forsaken the quest for speed, is president and Harrison Boyce, the inventor of the instrument, secretary. Incidentally, Boyce is said to be the inventor of a well-known safety razor, a demountable rim, a horn and a shock absorber, so that he may be said to have qualified as an eliminator of some of the troubles that beset mankind.

The motometer consists essentially of a thermometer of highly specialized construction with its bulb, well protected, extending downward about an inch through a hole in the radiator cap into the air space above the waterline in the radiator. A pair of beveled glass crystals, framed in a substantial metal ring, enclose that part of the thermometer which projects above the radiator cap and also the silvered disk upon which the figures of the scale are marked. The thermometer tube, which contains a specially prepared red liquid, is vertical, extending from the top to the bottom of the metal case.

A round hole, the upper edge of which is just at the line indicating the boiling point of water, enables the driver to see the red column, which becomes visible over the lower edge of the round hole when the temperature reaches a little over 130 degrees Fahr. The thermometer tube is so formed that the red column is greatly magnified and is plainly visible to the driver, even at night, when the light from street or window lamps ahead of the car causes the red line to stand out boldly and clearly. The metal ring and the little base which rests on the radiator cap are gold-plated to match brass-trimmed cars and nickeled when the trimmings of the car have a nickel finish.

With a motometer installed on the radiator of a car the temperature fluctuations due to varying conditions of operation can be watched as they occur. Not only can the overheating of the motor be anticipated, but excessive cooling, such as is quite common in cold weather, will make itself apparent. The breaking of a fan belt will be marked by a rapid rise in temperature, as will the derangement of any other part of the cooling system, and the effect of various throttle openings and carburetter adjustments on temperature can be observed. As the scale goes clear down to the freezing point, it is easy to tell when the water in a standing car is getting too cold for safety, and warming-up measures can be taken at once to prevent the disastrous congelation of the water. The price of the motometer is $10.

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NEWER AMES CARS WELL STANDARDIZED PRODUCTS

Two Body Styles on One Chassis, with Left Drive and Center Control, Complete Line — "Six to be Added Later.

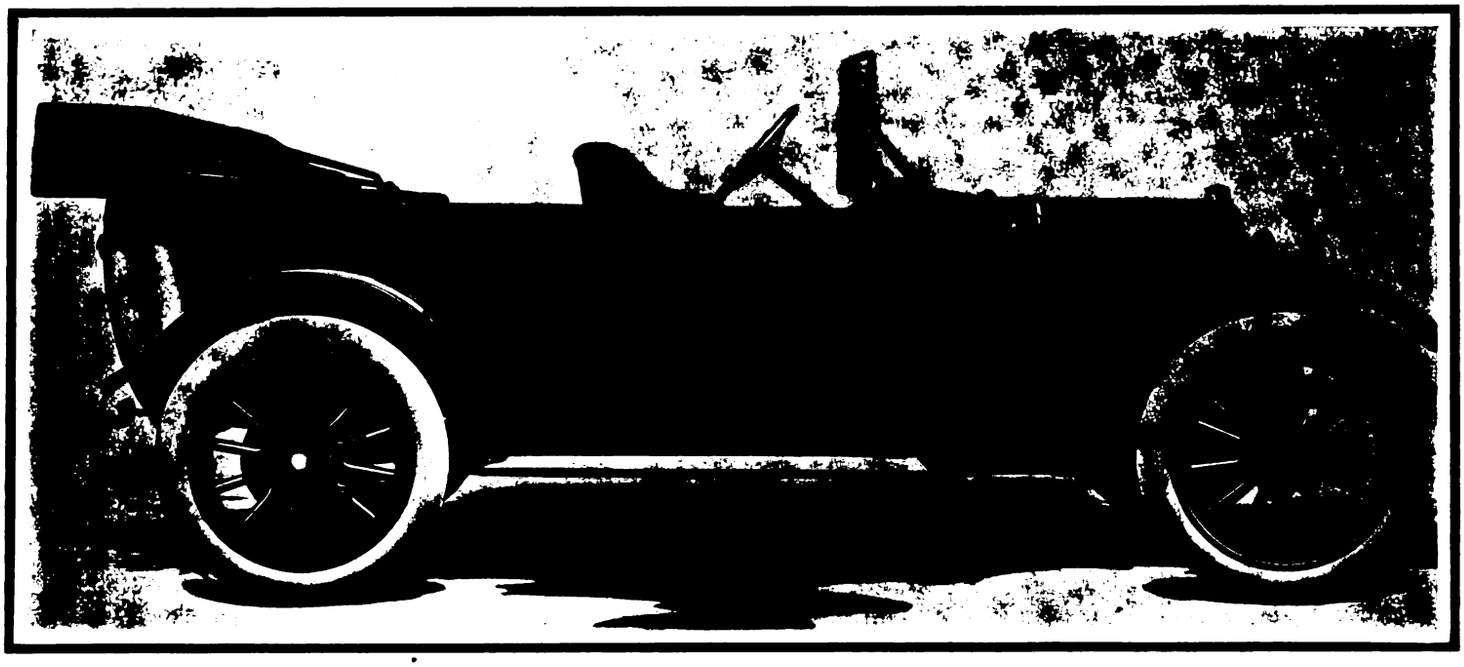
Although indication is made that an exceedingly attractive "six" shortly will be added to the line of cars produced by the Ames Motor Car Co. of Owensboro, Ky., activities for the present will be centered upon the distribution of two four-cylinder models, one a roadster and the other a touring car, both of which are mounted on the same chassis. In common with the products of a number of other manufacturers who apparently have seen the bright light of the times, both cars are of the left drive and centrally controlled variety and their accoutrements are such as to leave little to be desired.

As becomes the products of old line carriage makers whose horse-drawn vehicles have made a name for themselves by reason of their beauty of outline and their finish, bodies are cleverly proportioned creations in which the severity of straight lines is offset by gracefully curved and well-fitting fenders and a careful blending of lines at the dash and tonneau. Both the roadster and the touring car have deep skuttle dashes, the roadster being of the "cruiser" type in which the gasolene tank is beneath a gently sloping after "deck," which serves also to mount the spare tires.

The price of both models is the same—$1,595—and includes complete equipment. Both are electrically lighted throughout by means of a dynamo-battery system of the orthodox pattern and both are equipped with an efficient type of compressed air engine starter; its action is positive. The electric light equipment includes 12-inch head lamps, 7-inch side lamps and a 6-inch tail lamp. The nominal equipment that is furnished with both models includes a top of best quality mohair on a substantial frame and complete with slip cover and side curtains; a Universal ventilating windshield, demountable rims, the usual robe and foot rails, pump, jack, tools, and tire repair kit.

The Ames company is only one of many which prefers to build up its cars from the products of parts makers of recognized ability, and considerable pride is taken in the fact the motor is a Continental of the long-stroke variety. The bore is 4⅛ inches with 5¼ inches piston travel and, though the horsepower rating is nominal, it is a matter of common knowledge that actual power considerably in excess of the rating invariably is produced. Cylinders are cast in a single block with the valves all on the same side, which arrangement makes it a comparatively simple matter to enclose all the mechanism easily by means of a single removable metal cover; valves measure two inches in diameter. Cooling is effected by water centrifugal pump circulated, and a draft is induced through the radiator with a fast-running ball-bearing mounted fan. Lubrication is by combined splash and force feed and ignition is by Remy dual high tension magneto system.

As is the case with the motor, clutch and gearset elements also bear the nameplates of well-known makers, both coming from the Warner company. The clutch is of the multiple disk type with Raybestos faced disks, and operates without oil. The gearset is of the selectively operated type and provides three speeds forward and reverse. Both clutch and gearset are contained in a unit housing which serves to enclose the flywheel, thereby imparting rigidity to the structure and ensuring against the ingress of dirt or other foreign matter. Control levers are attached directly to a housing on the gear case, thus permitting center control without undue complications. Two Spicer universal joints transmit the power to the rear axle.



FIVE-PASSENGER, FOUR-CYLINDER AMES TOURING MODEL WHICH SELLS FOR $1595 EQUIPPED

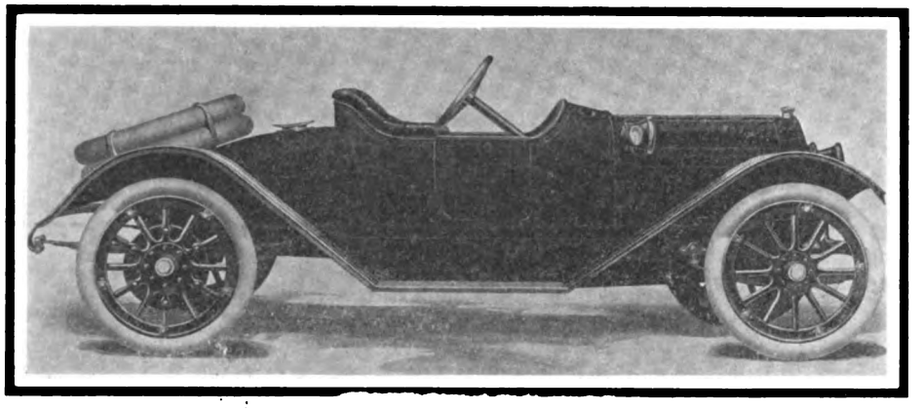
Having chosen accessibility as a fetish, it is carried clear back to the rear axle, which is of the full-floating type and is produced by the Hess Spring & Axle Co. Annular ball bearings are employed throughout. The front axle is drop-forged I-beam in section and supports the chassis through the intermediary of semi-elliptic springs. Rear springs are of the three-quarter elliptic type. The front springs measure 36 x 2 inches and the rear springs measure 48 x 2 inches. Two sets of brakes are provided, and both are carefully equalized. Both are internal expanding and operate in 14 x 2-inch drums bolted to the rear wheels. The wheelbase of the standard chassis, upon which both models are built, is 118 inches, tires being Goodyear "No-Rim-Cut" and measuring 34 x 4 both front and rear; they are mounted on Baker bolted-on rims.

One of the little details which goes far toward indicating the care which has entered into the designing is that though the

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gasolene tank is located under the front seats, permitting gravity fuel feed, it is not necessary to remove the cushions to refill the tank. The filler pipe is arranged to protrude into the glove or goggle compartment between the seats. Another small feature which is suggestive is that, instead of being fastened with screws which may or may not catch in passenger's clothing, the body molding is fastened to the body on each side underneath; consequently there are no projections, unsightly or otherwise.

In designing the upholstery of both models, the Ames engineers have worked on the hypothesis that it is not practical, for rough, out-door use, to attempt to build into a car the luxurious type of down and goatskin cushions made famous by certain British morocco-leather upholsterers. Similarly, it is impossible, in the opinion of Ames upholsterers, to depend entirely upon the filling about which the cushions are built. For this reason, Ames cushions are built up of carefully selected springs, which have been chosen for their resiliency, backed up with filler which is calculated to give long life to the cushions and to cause them to hold their shape indefinitely under hard usage rather than to give it an unnecessary degree of luxuriousness.



AMES ROADSTER WHICH IS OF "CRUISER" TYPE

"Cycle Car" is Officially Defined.

Speculation which has been rife regarding just what is a "cycle car" and just what is not a "cycle car," that hybrid form of vehicle which is neither an automobile nor a motor cycle, at length has been set at rest by a joint ruling defining the term which has been issued by the British Auto-Cycle Union to the Royal Automobile Club of Great Britain. In it, it is pointed out that the chassis weight of a cycle car "must not exceed 600 pounds, inclusive of the weight of the tires, or, in the case of those vehicles the bodies of which are not separate from the chassis, the total weight, all on and ready for the road, but without fuel, oil or water, must not exceed a total of 700 pounds."

VALUE OF ALCOHOL FUEL COMPARED WITH GASOLENE

Greater Power Despite Lower Heat Value Made Plain by Government Report—Not Suitable for Ordinary Engines.

With the price of gasolene already high and threatening to go higher, added interest naturally attaches to the oft-reiterated possibility of employing denatured alcohol for fuel, if for no other reason than that relief in the form of an efficient carburetting device employing kerosene seems remote at present. In fact, for a number of years the Federal government has been experimenting with denatured alcohol with a view to determining conclusively its value as a fuel for internal combustion motors as compared with gasolene, and at length the results have been made public in a volume compiled by R. M. Strong and Lauson Stone and published by the Bureau of Mines of the Department of the Interior. It is entitled "Comparative Fuel Values of Denaturel Alcohol and Gasoline in Internal Combustion Engines," and is virtually a summary and supplement to a small bulletin on the same subject published by the government in 1909.

For those who are not familiar with the meaning of the term "denatured" alcohol, it is defined as grain alcohol made poisonous and repulsive by the addition of other ingredients, the generally accepted formula being: Grain alcohol, 100 parts; wood alcohol, 10 parts; benzine, 10 parts. Among a number of other interesting things pointed out in the report is that, contrary to the general conception the heating value of denatured alcohol is approximately half that of gasolene of a specific gravity of .71 to .73, the former containing 71,900 British Thermal Units to the gallon and the latter containing 115 800 B. T. U. in the same quantity.

Extracting from the more interesting portions of the introduction, it is interesting to note that "a gasolene engine having a compression pressure of 70 pounds, but otherwise as well suited to the economical use of denatured alcohol as gasolene, will, when using alcohol, have an available horsepower about 10 per cent. greater than when using gasolene. When the fuels for which the respective engines are designed are used to the same advantage, the maximum available horsepower of an alcohol engine having a compression pressure of 180 pounds is about 30 per cent. greater than that of a gasolene engine having a compression pressure of 70 pounds, but of the same cylinder diameter, stroke and speed. . . .

"A gasolene engine working at the degree of compression ordinarily used for gasolene mixtures will, in general, require 50 per cent. more denatured alcohol than gasolene per brake horsepower. Gasolene and alcohol engines of similar construction working at degrees of compression best suited to the fuel supplied, in general require approximately equal volumes of gasolene and denatured alcohol respectively per brake horsepower-hour. . . .

"The relative hazard involved in the storage and handling of gasolene and denatured alcohol is of particular importance in considering their use as fuels. . . . In accordance with the general concensus of opinion of those experienced in handling gasolene, kerosene and alcohol, statistics indicate that the hazard involved in the use of denatured alcohol is much less than that in the use of gasolene and possibly less than that in the use of kerosene. . . .

"The price of denatured alcohol is greater than that of gasolene, and the quantity of alcohol consumed by an alcohol engine as ordinarily constructed and operated is, in general, relatively greater than the quantity of gasolene consumed by a gasolene engine of the same type. Considerable attention is being given to the development of processes for the manufacture of alcohol from cheap materials that are generally available, and the expectation seems reasonable that the price of denatured alcohol may eventually become as low as, or lower than, the price of gasolene, especially if the price of gasolene advances. It also seems reasonable to expect a greater general improvement in alcohol engines than in gasolene engines."

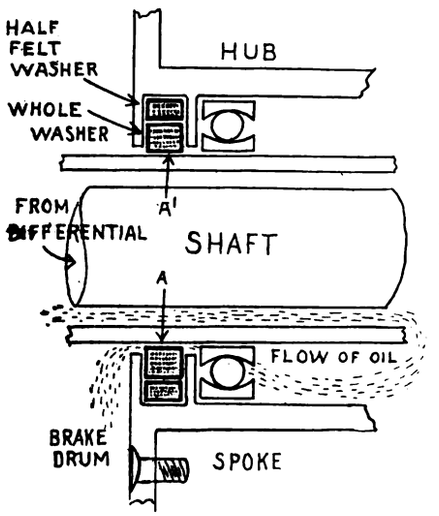
The report in detail covers 242 pages and consists principally of tables and graphs giving performances of a number of both alcohol and gasolene engines on both fuels. A detailed description of the equipment used, the methods of procedure and complete logs and deductions from the various tests also is included in the volume, which is unusually complete.

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KEEPING LUBRICATING OIL AWAY FROM BRAKE DRUMS

How Oil-Retainers Deteriorate and How They Can Be Improved—Washers that Automatically Compensate for Wear.

However important lubrication may be to bearing surfaces that should be as nearly without friction as possible, there are places where oil is distinctly out of place, to say the least, notwithstanding the fact that much friction may be caused by its absence. Which is as much as to say that the braking surfaces of a car are no places for oil, especially when the bands are lined with the asbestos fabrics that are so com-



OIL RETAINING SCHEME

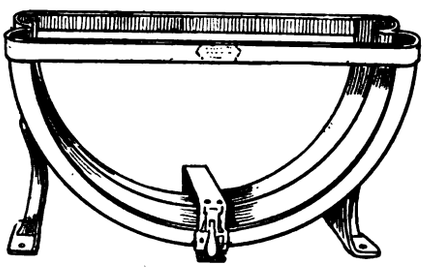
monly employed for the purpose. Felt washers are very commonly used to prevent the leakage of oil from the ends of live axles onto the brakes, and while such washers answer the purpose fairly well, at least when new, they become compressed in time, and are subject to wear, eventually allowing oil to work past.

In rear axles of the floating type, in which the wheel bearings are mounted on the axle tubes, there must, of course, be a certain amount of clearance between the shafts and the tube bore; unless special means are taken to prevent it, there will be a gradual seepage of oil or grease—or both—from the differential housing along the tube and out between the shaft and tube. The accompanying illustration shows the condition of affairs in a diagrammatic and exaggerated way. The oil that works along the axle serves a useful purpose in that it lubricates the bearings, as shown; but the trouble is that too often it does not stop there, but passes on to the brake drums;

The illustration shows a method of remedying the trouble. This plan has proved in actual service to be well worth trying. The wheel should be removed from the axle and the felt washer reduced to half its original thickness—that is to say, the central opening should be increased by half the width of the felt ring. A new felt washer should be made of exactly the same dimensions as the original washer before being cut down. The new washer is put in place and the old one, which has been cut down, is forced on outside of the new one, which thus is pressed down on the tube firmly, preventing the passage of oil; considerable wear must occur before there can be sufficient opening for the leakage of oil. Both washers should be saturated with oil before they are put in place. Hard, green piano felt is the best material for the purpose, as it is of excellent quality, not too soft, and wears much better than ordinary felt.

Perfecting the Spare Tire Holder.

There can be no question whatever as to the satisfaction that is felt when a blow-



SLY "PERFECT" TIRE CARRIER

out occurs, and there is a spare tire on the car to take the place of the crippled pneumatic; but when it comes to the problem of carrying the tire, there is a question—how to make the best disposal of a decidedly clumsy article, not marring the appearance of the car more than can be helped and not taking up space that might better be used otherwise, and yet placing the tire so that it can be reached without delay and holding it securely while it is waiting for the emergency for which it is provided.

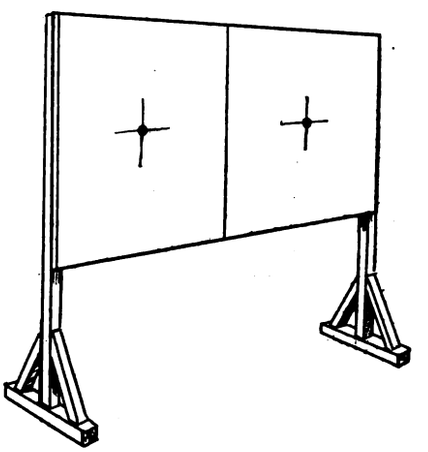
One of the more recent of the many ideas for carrying spare tires is embodied in the device shown in the accompanying illustration, the Sly "Perfect" tire holder, made by the W. W. Sly Mfg. Co, of Cleveland, O. Designed to be attached to the running-board of the car, the body is not in any way marred by the holder or its fastenings. The tire or tires, as the case may be —the holder is made either for one of two —bed down snugly and without looseness and are held firmly in place by a steel hasp with a toggle lock which will not jar loose. The material used is stamped steel, finished in durable black enamel. Sizes are made to fit all standard tires, both in single and double patterns.

CORRECTING LAMP FOCUS WITH A HOMEMADE DEVICE

Simple Method of "Lining Up" Diverging Light Beams—Bent Mudguards That May Cause Unsuspected Effects.

It is a fact recognized by the majority of electric lighting apparatus manufacturers that much of the trouble experienced with head lamps can be traced to improper focusing or adjustment that has gotten out of kilter through one fault or another. Generally, head lamp brackets are tied to the mud guards by means of short rods and turnbuckles, the purpose of the connection being to steady the lamps and in some cases to brace the guards.

In such cases, it is natural to assume that



LAMP FOCUSING STANDARD

a slight collision with another car or with some stationary object which results in one or the other of the guards being bent will throw one or both of the headlamps out of line, and possibly out of focus. The deflection of the lamps due to the bent mudguard may not be perceptible in the lamps themselves, though it is practically certain to make itself known by the divergence or convergence of the light beams when the lamps are lighted. Similarly, the lamps may be tilted either up or down and in any case they cannot be as useful or as efficient as they are supposed to be and will be if they are properly focused and set.

Where the lamps are tied to the mudguards by means of rods and turnbuckles it should be a simple matter to "line them up" merely by turning the screws of the turnbuckles—provided, of course, that the mudguards are not so badly bent as to make imperative their straightening. In order to make sure that the lamps really are straight and that they are properly focused a simple stand like the one shown in the picture is valuable. It consists of a

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wooden framework on which is tacked a large sheet of white paper, or, preferably, Bristol board. Two large black dots are placed on the cardboard at a height from the floor equal to the distance from the floor to the centers of the lamps; the distance between them is equal to the distance between the centers of the lamps.

The car should be placed about 25 feet away from the board with the lamps lighted and pointed at it. Of course, it is quite feasible to dispense with the board and place the marks on any convenient wall or fence. The convenience of the stand, however, lies in the fact that it is easier to move the stand in order to get it squarely in front of the car that it is to manouver the car to get it "square" with the wall. With the car and the stand in the positions outlined, the lights should throw circular light patches devoid of dark rings with the centers of the patches directly over the black dots. If the beams do not strike the board in the right place, the lamp brackets can be adjusted by means of the turnbuckles, or, if none are used, the brackets can be bent quite easily with a large wrench. Care must be taken, however, that the wrench does not slip and break the lamps. In focusing the lamps, the bulbs should be moved backward and forward (adjustment generally is provided) until the light appears in two clear circles without any dark encircling rings. It is best to focus each lamp separately, shutting off the light of the other with a dark cloth.

Sleeve to Assist Coupler Assemblage.

To catch the thread on a union on a piece of copper tubing when the joint is to be made in a "tight place" is an exasperating job, but when the rotatable member will persist in sliding along the pipe and jamming behind some projection each time it is released for a second, it becomes even more trying. A good plan is to solder a sleeve around the pipe about four inches from the end so as to limit the travel of the member; if the pipe is made up, a couple of layers of bare copper wire soldered in place will answer admirably.

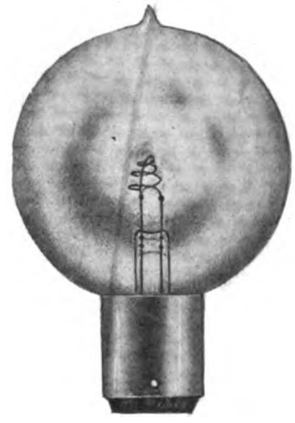
Metallic Cement for Filling Blow-holes.

A metallic cement which, applied when plastic, will harden perfectly in a few hours, is made by moistening 20 parts of precipitated copper with sulphuric acid and adding to the paste 70 parts of mercury, constantly stirring the mixture. When the copper has amalgamated with the mercury, the acid is washed out with boiling water and the cement is applied to the work. The cement is ideal for filling sand or blow-holes, and is unaffected by the action of water or dilute acids. The surfaces to which it is applied should be thoroughly clean.

Reducing Waste in Electric Lights.

The extended adoption of electric lighting for automobiles has proved an incentive to lamp specialists to overcome the difficulties that lie in the way of producing lamps that are both efficient and economical, and among the pioneers in the manufacture of small, high-efficiency bulbs is the firm of H. J. Jaeger & Co., Terminal Building, Hoboken, N. J., whose most recently developed tapered spiral filament Tungsten lamp is shown in the accompanying illustration.

In the Jaeger lamp, which is made for 6,

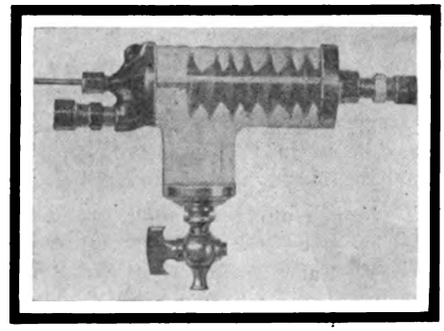


JAEGER TUNGSTEN LAMP

8 and 10 volt currents, the Tungsten filament is in the form of a spiral, the result being that it does not cast shadows or radiate light unevenly, which makes it especially suitable for electric headlight work. The current economy of the Tungsten filament has been combined with a resistance to vibration that was not a characteristic of early Tungsten lamps, a certain flexibility of the Tungsten wire being in part responsible for this fact.

Filtering Gasolene in the Fuel Line.

The peculiar effectiveness of chamois as a filtering medium for gasolene has been



"PERFECT" GASOLENE FILTER

cleverly taken advantage of in a device that just has been placed on the market by the Gasolene Filter Co., 10 West 62nd street, New York City. The "Perfect" filter, as the attachment is called, is shown in the accompanying illustration, which is a "ghost" picture showing the "insides" of the ingenious device.

The inlet from the gasolene tank is on the left and the outlet to the carburetter on the right; the outlet can be reached by the gasolene only after passing through a sort of bellows of chamois and wire gauze which effectually excludes any water and solid matter that may be in the fuel. Impurities fall into the cup which forms the lower part of the instrument and may be drawn off through the usual pet-cock at the bottom. In course of time a certain amount of foreign matter is likely to accumulate on the strainer; it is readily dislodged, however, by pushing in the little rod that projects from the left end of the filter, just above the gasolene pipe connection. The rod is attached to the end of the bellows and when pushed it causes it to fold up; the gasolene inside is forced back through the chamois and gauze, washing off the dirt.

There is no tendency to feed gasolene too slowly, as there might be if only a small area of chamois were employed; the bellows has an area of about 20 square inches, and this is sufficient to permit a free and unimpeded flow of fuel. Compression couplings, which do not require soldering, are used for attachment, so that the filter can be installed by merely cutting five inches out of the line and gripping the pipe ends in the couplings by means of the compression nuts. The filter is finished in nickel and the price is $5.

Vanadium's Effect on Cylinder Castings.

A foundry which produces gasolene motor cylinders of peculiarly difficult form, from a founder's point of view, is reported to have reduced the percentage of loss in discarded castings from 6 per cent. to 1.4 per cent. by the use of vanadium in the iron. At the same time the tensile strength of the iron has been increased some 15 per cent. and the hardness also has been augmented.

Loose Bulbs Cause of Lamp Trouble.

A possible cause of the breakage of incandescent lamp filaments in either inside or outside automobile lamps is looseness of the bulbs in their sockets. The rattling of the lamps is accompanied by a series of sharp little raps, which hasten the destruction of the filaments. It often is possible for such looseness to exist without interrupting the flow of current.

Brine Bath for Tempering Steel.

If maximum hardness is required of a piece of steel, it should be quenched after heating in strong brine. This cools the metal with great rapidity, and the steel so hardened will be of glassy density, though of course extremely brittle.

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KEEPING PACE WITH LIGHTERS AND STARTERS

Actual Amount of Care That Is Required to Maintain Average Electrical Equipment in the Proper Condition to Render Best Service—The Ward Leonard System as an Example of Simplicity.

(This is the thirteenth of a series of articles designed to make clear the electric lighting and engine-starting systems in use and to render easier their care and repair by the dealer and owner alike.)

Like everything else that has been intimately connected with the development and perfection of the modern automobile, the electric lighting and engine starting system has, of necessity, passed through a period of adolescence. And, like the growing child, it has played pranks apparently without reason and been disciplined, so to speak, and in some quarters it has gained a name that has not been good and that has not been conducive to the peace of mind of its progenitors. But electric lighting and engine starting now has "grown up"—its growth during the past year has been almost marvelous and its simplification and efficiency have kept pace with it.

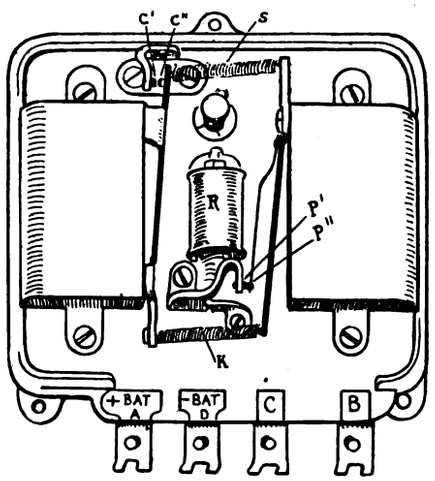
Perfection Responsible for Adoption.

In all probability it was the pranks played by early systems that have been responsible for the comparatively slow death of natural feelings of distrust bred of the indeterminate action of generators and batteries built primarily for stationary use and more or less out of place on automobiles. It required a very considerable time for the knowledge to seep in that for successful operation on an automobile under automobile conditions, generators must be built especially for the work and with all the phases of the work in view. It was small wonder that some of the early systems worked at all, let alone gave the degree of satisfaction they did give.

It is obvious, of course, that conditions are different now; that the modern electric lighting and engine starting system is so nearly perfect that there is comparatively little room for improvement, for if this were not so it is extremely doubtful if so many well-known automobile manufacturers with established reputations for conservatism and care in the choice of accessories would have adopted them and given to them their unqualified recommendation. This fact is in itself a guarantee that they will work and work well without the necessity for continual attention at the hands of an expert electrician or engineer.

Technical Education Unnecessary.

Apparently, however, those who are inclined to look at electrical systems askance have overlooked this all important feature. It stands to reason that no reputable automobile manufacturer would equip his products with devices about which doubt exists And it is reasonable to expect, also, that no manufacturer would add weight to his cars by placing on them accessories likely to become not much more than dead weight by reason of continual functional derangement. Which is to say, the average electric lighting and engine starting system as it comes from the manufacturer to-day is as nearly perfect as present intelligence can make it and will remain dependable in the



WARD LEONARD REGULATOR

majority of cases if it is let alone. Of course, it will require a purely nominal amount of care—every piece of machinery requires it—although the care that is necessary does not require a technical education to back it up. The technical education already has been supplied by the manufacturer, and the only remaining requisite is common sense—and a knowledge of the construction and working of the system.

Opportunities That Dealers Overlook.

One of the first things a skilled mechanic endeavors to find out when he is called in to doctor a piece of 'sick" mechanism is just how it ought to operate when in prime condition. With that knowledge, it is a comparatively simple matter for him to diagnose the trouble and remedy it. But he must know in the first place just how the wheels go around and why they go around before he can tell why they don't go around and start them again on their merry whirls. It is exactly the same with the electric lighting and engine starting system, as has been told several times in the twelve preceding articles on the same subject which have appeared in Motor World. The owner may not feel inclined to spend the few moments daily necessary for him to become acquainted with his system, though it will be his own loss if he does not, but there can be no excuse for the dealer slighting his customers and himself by remaining in ignorance. The dealer has every day a better chance to become thoroughly acquainted with his own system then the owner ever has, for the dealer very probably is dealing in hundreds—perhaps thousands—whereas the owner comes in contact with only one. It is to the dealer that the owner appeals when in distress, and if the dealer has improved his idle moments by acquiring information about his system, he is just that much further along in the world.

Development of a Pioneer System.

All electric lighting and engine starting systems really are simple if the owner and the dealer will only come to know it. Apparently, however, they prefer to take it for granted that present day systems are as complicated and as unreliable as were those of a few years ago. They do not stop to think that if such were the case it would not be possible to dispose of them, for the manufacturer of the car would be the first to object and it is doubtful if any manufacturer of electrical equipment could hope to prosper without the aid of the car manufacturer. Few manufacturers of electrical equipment make any attempt to market their wares direct, for which reason the regret becomes more real that they do not insist upon more perfect knowledge of their systems by the car builder, for they must rely upon him to a certain extent, and it would be better if they could rely upon him with greater faith in his ability to adjust to better all around advantage such slight mechanical troubles as are likely to develop in even the best of mechanism.

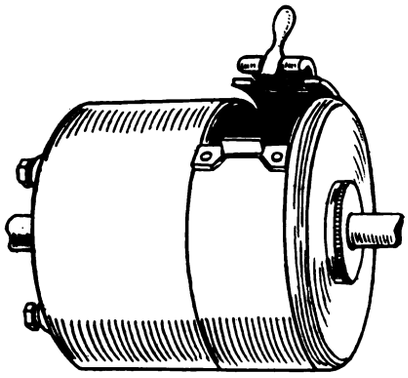
When electric lighting for automobiles was in its earliest infancy, as long ago as 1906, H. Ward Leonard, then and now

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head of the old-established Ward Leonard Electric Co. of Bronxville, N. Y., was putting the finishing touches to his electric lighting system for motor cars, more than 20 years having been spent in developing and perfecting the control elements around which it was built. Two years later, in 1908, the first complete Ward Leonard electric lighting system was placed on a car and thoroughly tested in an extended trip from New York to a point near Lake Nipissing, in Canada. Suffice it to say that it finished the run without the slightest trouble and that since then it has been still further perfected and refined, until brought to its present form. Since, the system has been amplified by the addition of a starting motor.

Three Essentials of Simple System.

In its essentials the Ward Leonard system differs in no wise from other systems. There is a generator, an automatic cut-out,



WARD LEONARD GENERATOR

a storage battery, a switch, and a motor. The generator, which is shown by the accompanying picture, is of the plain shunt type and there is only one moving part in it—the armature. The automatic cut-out is of the electro-magnetic type and is contained in a tight casing on the dash; the switch is a combined junction box and switch and is of the rotary type; the motor is a plain series wound type in which the torque increases with the load.

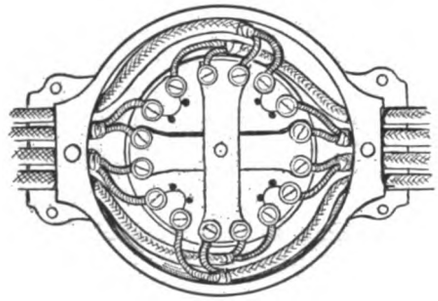
Ingenious Regulating Mechanism.

The manner of regulating the output of the generator is unusual and is peculiar to the Ward Leonard system; it is covered by patents. The machine is of the constant current type. That is to say, the output in amperes is maintained constant within very narrow limits, regardless of the speed of the armature and the manner in which this characteristic is obtained is simple in the extreme.

Like the cut-out, the regulator is of the electro-magnetic type and is enclosed in the same dash-mounted casing as the former. Both are shown by the accompanying picture, which depicts the whole mechanism with the cover removed. In this case there are two electro-magnets and a tiny resistance coil, the magnet on the left in the picture being the cut-out and the one on the right being the regulator. The tiny resistance coil (R) is placed between the two magnets.

How Constant Current is Obtained.

In operation, as soon as the speed of the armature becomes such as to cause the generation of voltage in excess of the voltage of the battery, two contacts (C' and C") are brought together by the attraction of the cut-out magnet for the armature which carries one of the contacts. As long as the amperage of the generator remains less than 9.9 nothing else happens. Immediately



SWITCH-JUNCTION BOX

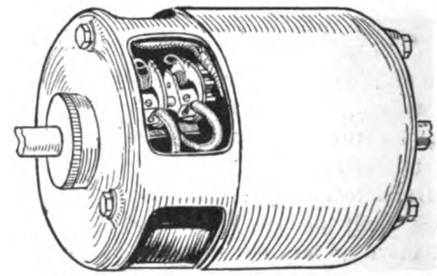
the amperage exceeds 10, however, the current becomes strong enough to attract the arm of the other magnet (in the regulator), with the result that the contacts P' and P" are separated, thereby placing the resistance coil (R) in the field circuit of the dynamo. As the field is weakened by the insertion of resistance which permits less current to pass through it, the amperage drops and immediately the contacts come together again, removing the resistance and permitting the field to build up to its original strength. The arm of the regulator is spring-returned (K) and therefore vibrates continually, maintaining the amperage to all intents and purposes absolutely constant. Its rate of vibration is such, however, that it is not appreciable in any flickering of the lamps.

Care of the Regulator Made Plain.

There is nothing in either the regulator or the cut-out that should require attention. The contacts are formed of hard material calculated to withstand indefinite service, and there are only two moving parts—namely, the armatures. These are hinged to their supports by means of flexible metal straps, there being no movable joints. Hence, it is not even necessary to apply a drop of oil occasionally.

About the only thing that could happen to the mechanism would be slight corrosion of the contacts due to the presence of oil or water; the possibility is remote, however. If the contacts should become corroded or dirty, thereby partly impeding the passage of current, it is a simple matter to clean them with a couple of small pieces of emery cloth glued to opposite sides of a piece of thin Bristol board.

The operation of either the cut-out or the regulator can be watched quite easily by removing the aluminum cover which encases them. When the car speed reaches approximately seven miles an hour, the cut-out contacts should come together and remain together until the speed is reduced, when they should separate promptly. Naturally, if they stick together, which is unlikely by reason of the fact that the passage of current through the magnets in the reverse direction acts to "kick" the armature off, the battery will exhaust itself through the generator. Similarly, if they do not come together when they should, the battery will gradually exhaust itself because no more "juice" will be put into it. Either trouble is indicated by the symptom of gradually dimming lamps, and is easy of correction. Owing to the fact that the



MOTOR, SHOWING BRUSHES

mechanism is very carefully adjusted at the factory for a predetermined current, no attempt ever should be made to alter the adjustments.

Rotary Switch and Junction Box.

The switch, as has been pointed out, is also a junction box, or a central point to which all the wires lead and from which they are connected to the lamps. The portion of the switch which is illustrated is fitted to the back of the dash with the switch handle passing through to the driver's side. Manipulation of the switch permits the lighting of all the lamps or of any combination at the will of the operator. As the complete system comes from the factory, it is carefully wired with armored cable with all terminals marked in a plain manner to make their proper connection a simple matter that can be done by anyone. Any of the cables may be removed without the necessity for disturbing any of the others.

The dynamo and the motor in the Ward Leonard system virtually are duplicates, ex-

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cept as regards their wiring and size. In both, the brushes are of the radial type, which type, in the experience of the manufacturers, is best suited to withstand the vibration and hard use necessary in an automobile. The brushes are formed of a special material which is calculated to run for indefinite periods without wear and without lubrication. Commutators are solidly constructed of hard drawn copper and are well insulated.

How to Get at the Brushes.

Commutators and brush holding mechanism are accessible through openings in the casing casting, which are closed under ordinary conditions by means of continuous bands of metal which are held in place by simple catches. Loosening the catches serves to permit the removal of the metal bands.

In the care of any electric lighting and engine starting system experience has proven that commutators and brushes generally are productive of nearly all troubles that may arise to harrass the owner. Such troubles easily can be obviated, however, by periodical inspection and intelligent care. Generally commutators will run at least for a season before they require to be touched, though it is the better part of wisdom occasionally to inspect them and it will do more good than harm, for the inspection serves as a good excuse to remove any accumulations of dirt and dust or oil that may have collected. A soft camel's hair brush should be used, preferably, for the purpose. Never replace the straps that close the openings before carefully wiping them with a cloth dampened with gasolene and removing dust which may cling to the edges of the straps.

As the armature shaft rotates in ball bearings its needs in the matter of lubrication will be exceedingly moderate. In no case should more than one or two drops of fine machine oil be placed in the holes provided for the purpose more than once in two or three weeks. Too much oil will be thrown out by centrifugal force and will collect on the brushes and commutator and cause trouble. Incidentally, if it comes in contact with the wiring it may have a bad effect on the insulation. All of which applies with equal force to both the motor and the generator.

What a Brownish Glaze Indicates.

If, in the inspection of the commutator and the brushes, the former exhibits a brownish, glazed appearance and the brushes are not perceptibly worn, neither should be touched, for they then are in the best of condition. If, however, the commutator appears dry and caked, or scratched, No. 00 sandpaper should be held lightly against it while the armature is rotating and after the brushes have been removed. In cases where the commutator appears badly cut or scratched, the brushes should be examined to make certain that they are of the proper length and that they bear on the commutator with proper strength. If they bear too lightly, sparking is likely to result, and if they bear too heavily, they may cut the comparatively soft copper. Adjustments should not be changed, however, unless there is an unmistakable evidence that the pressure is not correct. Brushes have been known to contain tiny, hard particles which have scratched commutators and, though they are of infrequent occurrence, it will do no harm to make sure that they are not present when making the inspection. Sometimes it is well gently to sandpaper the ends of the brushes where they press against the commutator, though when this is done care must be taken not to disturb the curvature any more than can be helped. It is not necessary that the curvature be restored exactly, as the brushes soon will wear until they have a perfect contact.

Motors Require Little Attention.

Naturally, as the generator is in operation all the time the motor is running, its commutator and brushes will be subjected to greater wear than will those of the motor and, consequently, they will require more frequent inspection. As the motor is used at infrequent intervals and is inoperative when not actually in use, its brushes and commutator should not require to be touched from one season's end to the next. When they finally do give evidence of requiring attention, they should be treated exactly the same as those of the generator.

One feature to which not sufficient attention is paid by owners and dealers is that brushes often are run too short. It is false economy to attempt to make brushes last "just a little longer" when they ought to be replaced with new ones. Short brushes reduce the tension on the brush holder springs and, as the brushes do not then make proper contact with the commutator, sparking results. The better way is to replace brushes immediately they have worn down perceptibly, spare brushes, which cost but a few cents, being carried for the purpose.

New Randerson Bumper Developed.

When an automobile comes into collision with anything there is considerable liability of damage being done either to the front ends of the springs and frames or to the fragile radiator—to say nothing of the damage that may be sustained by the object with which the car collides. To eliminate, or at least minimize, the results of such shocks, many varieties of "bumpers" have been brought out, one of the firms that has been prominent in this line of manufacture being the Randerson Auto Parts Co., of 110 West 34th street, New York, which recently has added to its line a bumper, model M, which embodies some improvements over the older models.

Ther new Randerson bumper has two forward rails, one behind the other, attached to rearwardly projecting arms of steel having at their rear ends means for attachment to the car. These arms are not continuous, however, but consist of a cylinder-and-piston arrangement, the cylinder being on one section and the piston on the other, the two fitting together without shake or rattle. The piston in each arm is backed by heavy coiled steel springs, which are compressed in case of shock.

The Randerson bumpers are made in two general types. In one the front rails are designed to turn either up or down, so as to be out of the way of the starting crank or of repairing operations, etc. In the other the hinge arrangement is absent. The materials used are manganese bronze and steel for the supporting arms, reinforced brass-covered steel tubing for round rails and T-iron for T-shaped rails; the rails may be had in either form. Either single or double front rails are furnished. Round rails are finished in polished brass and T-section rails in nickel on copper, or in hard rubber enamel, baked on.

To Keep Valve Parts Out of Motor.

One of the most unpleasant of the little things that happen in the course of tinkering about a motor is the dropping of a valve lifter into an inaccessible crankcase when the guide is removed for any reason. The lower end of the lifter rests on the cam, and when the guide is moved sufficiently to let the roller clear the cam, down it goes, unless there is something to stop it. To prevent such vexations, a piece of stiff wire twisted around the adjusting screw, or anything that will not pass through the opening, should be put on as a safeguard before the holding-down nuts are removed. Of course, there are engines with crankcases so accessible that little inconvenience is caused by the dropping of parts inside; but other are less conveniently built, especially old models.

Light Spring that Aids Valve Grinding.

In regrinding valves, it is advisable to use a light spring under the valve head, acting to raise the valve from the seat; the valve should be worked up and down so as to work the abrasive material onto the seat. In grinding, the valve should be rotated with a reciprocating motion, not turned continually in one direction, else ridges will be formed.

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FORCING THE HEADLIGHTS TO SHINE THROUGH FOG

Stray Rays That Are Worse Than Useless—Simple Methods of Suppressing Them—Reflectors and Colored Screens.

In night driving when the air is clear it is a comparatively simple matter to provide sufficient light to adequately illuminate the road ahead of the car; good acetylene or electric headlights are numerous and the amount of light, within reasonable limits, is dependent only on the size of the lighting apparatus one is willing or is able to purchase.

When, however, fog prevails the conditions are entirely different. The stronger the light, the better, of course, but the only rays that are of any use are those which are thrown directly on the road ahead. Upwardly diffused light, which is not noticeable when the air is clear, has the effect of making the fog appear considerably more dense than it really is, the light being reflected back to the observer's eyes; the angle of incidence and the angle of reflection are equal, and most of the upwardly diffused light is reflected to the driver's eyes from a point between him and the road a short distance ahead, and the effect is so pronounced that in some cases it is easier to drive without the headlights than with them.

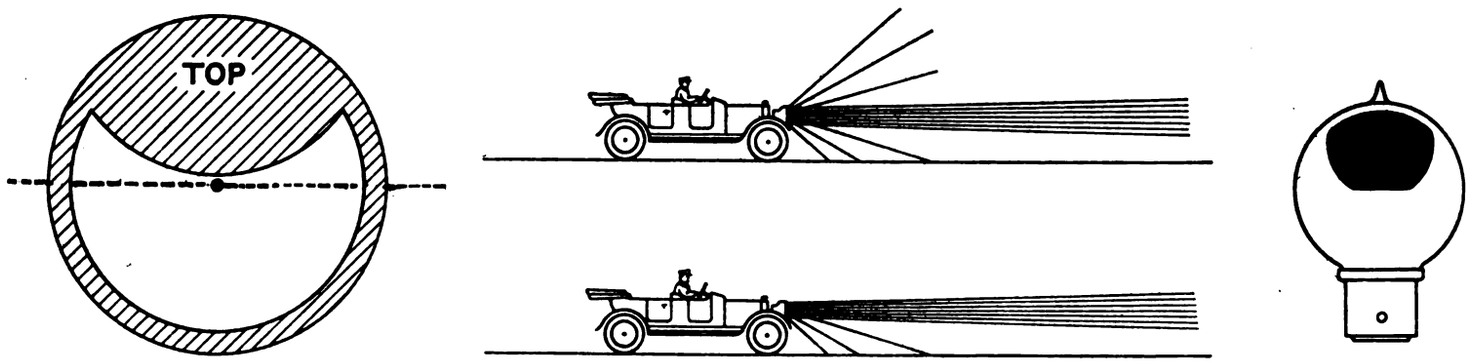
Red and yellow rays are considerably more penetrative of fog than white rays, and for this reason it has been suggested that colored screens or gold-plated reflectors might help matters—in fact, they have been tried abroad. As either of these methods would so greatly reduce the available quantity of light as to more than offset the advantages, in all probability, the most reasonable and, at the same time, the easiest plan is to cut off the upwardly diffused light and eliminate in this way the blinding effect of its reflection.

Two methods of doing this are shown in the accompanying illustrations, from "The Car." In the case of an acetylene headlight a mask is cut from sheet metal, and in the case of an electric light the material used may be cardboard; in either case the masks are finished with dead black paint, outside; the inner side will be better left white in the case of cardboard, and bright in the case of metal. If tin is used the bright surface will act as a reflector and the loss of a certain amount of illumination will thus be avoided.

The lower edge of the main body of the mask should be a little above the center of the glass. The circular rim and the top section will prevent light being thrown anywhere but ahead, and the beam will seem to penetrate the fog much better than without the masks, even though the amount of light is somewhat less than with the lamp front open. The mask is sprung into the door frame back of the glass. If it should show a disposition to shift, it can be "tacked" to the door frame with solder.

An arrangement that is somewhat neater and at the same time rather more economical of light is one that has been adopted by an English maker of electric headlights; but the plan obviously is applicable only to incandescent lamps. As shown in the illustration, a small shield of black material is attached to the upper part of the bulb of the headlight, not only shutting off the rays thrown out directly by the filament, but also turning back upwardly reflected rays. The side next to the glass of the lamp is silvered and acts as a reflector; the loss of light, therefore, is not as great as might be imagined, for part of it is turned back and sent out in the long-distance beam.

The use of sidelights in a fog is apt to make things unpleasant for the driver by diffusing light that is reflected back to his eyes from various points, giving him the feeling of being surrounded by a wall of impenetrable white. Of course, there is a great deal of difference in side lights in this respect. There are some that radiate light in a wide arc that produces a maximum of the blinding effect that is so exasperating —especially if the driver is in a hurry—while others act more like the headlights, which they resemble. In any case, however, the side lights, owing to their comparatively high position, are apt to be a source of trouble in this respect. Yellow glass screens will be of assistance, if it is desired to keep the side lights burning; the driver will be relieved of the back-thrown glare, while the lights will be visible from ahead.



CUTTING OFF LIGHT BEAMS THAT MAKE DRIVING DIFFICULT IN FOGGY WEATHER

Wichita Has Anti-Motor Thief Association.

When next an automobile thief in Wichita, Kan., makes away with a car he is going to stir up some excitement and also is due for the liveliest few hours he has put in in some time, for he will be pursued by a half hundred angry men on motorcycles and the thief will have to be acquainted with some secluded hole in the ground to evade capture.

The Wichita Anti-Motor Thief Association is the instrument designed to make this form of stealing unpopular. The motorcyclists of the city conceived the idea, and straightaway proceeded to put it into effect; and now C. M. Tucker, the city's automobile policeman, is seeking to get the automobile owners to form a similar body, after which the two may be merged. Insurance companies and car and motorcycle owners are to be requested to help defray the expenses of the work.

Provisions of the association are that when a car or motorcycle is stolen a posse of fifty or more motorcyclists will set out in every direction with the number and description of the car and cover every street and country road in search for the thief.

Freak Bet Tourist Now in Georgia.

Dr. H. Benton Young, of Trenton, N. J., a dentist, who wagered in July last that he could start with a capital of $5, make $10 in every town where he stopped, and complete the trip with a total of at least 10,000 miles within a year, is really performing the "stunt." He is now in Georgia, and last week had totaled nearly 6,000 miles. He expects to go to California and return to Trenton by March.

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STATE ASSOCIATION CHECKS THE NEW YORK TINKERING

Proposed Amendments Suppressed—Deer Re-elected President—Road Reform Advocated and "Corruption Fund" Hinted at.

If the New York State Automobile Association can prevent it, there will be no tinkering with the automobile law at the forthcoming session of the legislature. Despite the fact that some industrious member of the organization had drafted and outlined a long list of amendments which it was suppposed to have introduced, at its annual meeting in Utica on the 11th and 12th inst. wiser counsel prevailed and the amendments, and all talk of them, were suppressed. Melvin Bender, chairman of the association's legislation committee, who is stationed in Albany and who keeps an eye on the legislature, was the chief factor in snuffing out the movement to amend the law. He gave as his opinion that the present statute is admirably serving its purpose and counseled that it be left alone, which sentiment prevailed almost unanimously.

The association, however, entered into a considerable discussion of the State highway system, as it exists, and placed itself on record as favoring the amendment of the present highway law, to the end that the present highway system be abolished and that there be substituted a non-partisan highway commission of at least three members to serve not less than six years. The great increase in the cost of highway construction was remarked, and it was stated that quiet investigation had revealed that the present cost of $14,000 to $16,000 per mile is due to the use of "patented processes," which consist largely of simple methods for mixing crushed rock and asphalt, in which connection there was also talk of a "corruption fund."

Considerable dissatisfaction was expressed with the present form of apportioning the annual dues, whereby the national A. A. A. exacts 25 cents each year from each member of the state organization, but Laurens Enos, the new president of the A. A. A., who was present, poured oil on the troubled waters and averted unpleasant action which was threatened.

A. J. Deer, of Hornell, was re-elected president of the association; in fact, practically all of the other officers were re-elected, as follows: First vice-president, H. G. Strong, Rochester; second vice-president, Howard Martin of Albany; third vice-president, A. B. Maynard of Utica; treasurer, A. C. Parsons of Troy; secretary, F. D. Lyon of Albany; delegates at large, H. G. Meldrum of Buffalo, A. G. Batchelder and Charles Thaddeus of the "three A's."

Troy was selected as the place for the 1913 meeting.

Moose Jaw Rules on Lighting Idle Car.

Various courts and authorities in different parts of the country have ruled on the question as to whether a car which is standing in the street at night shall have its lamps lighted and not all are agreed; Moose Jaw, Saskatchewan, is the latest town to appear with a decision on this matter. Magistrate Dunn, sitting in Police Court, was called upon to try Richard Loney, whose car was found standing in the street at night without the number plate being illuminated. Attorneys quoted various sections of the Motor Vehicle law and offered interpretations both ways, but the judge used his own judgment and discharged the prisoner.

Paris Considering More Drastic Law.

The Municipal Council of the French capital is at present considering a series of new motor vehicle regulations which would impose drastic measures, to say the least, on law breakers. The proposed regulations provide that no one shall be permitted to drive a car on the public highways unless insured in an approved society; that a recording speedometer be fitted to every car; that in case of accidents the driver of the car be held responsible if the speed recorder registers a greater speed than 15 miles an hour; and that any driver who is convicted of causing an accident shall be deprived of his license for two years.

Boston Club Decides to Build.

It is altogether probable that before this time next year the Massachusetts Automobile Club, with present headquarters on Boylston street, Boston, will be housed in a brand new building, six stories in height and providing accommodations for some 400 cars in addition to the space required for the club rooms. It has been voted to open negotiations immediately to obtain the necessary land at the corner of Stuart and Clarendon streets and to proceed with the erection of the building which, it is estimated, will cost in the neighborhood of $450,000, and will measure 150 x 120 feet.

Herrmann New Head of Long Island Club.

Charles Herrmann, who for the past year has been vice-president of the organization, has been chosen to fill the higher office in the Long Island Automobile Club. The other officers elected are: Vice-president, Herbert G. Andrews; treasurer, J. S. Frazee; secretary, F. H. Newcomb; C. H. Galt, Edward Ashforth and A. W. Seaman are the new trustees.

12,678 MILES IS TOTALED BY PATHFINDER WESTGARD

Completes Task of Crossing Continent Three Times in Five Months and Four Days—For Federal Government and A. A. A.

Twelve thousand six hundred and seventy-eight miles in three jumps with scarcely a breathing space between them, is, as might be remarked by a facetious motorist, "some hike." But A. L. Westgard, who made the "hike"—not on foot but in a Pathfinder "40" car—already has an established reputation as a cross-country artist of ability and prowess, and it is altogether probable that he got more pleasure than work out of his 12,000 mile jaunt. Anyway, he says he is ready to do it all over again, and it goes without saying that the car is ready, too. In order to roll up that astonishing total mileage in the time he did it—just five months and four days—Westgard traversed the United States from coast to coast three times in succession, to say nothing of a side trip of 1,016 miles.

Westgard's pathfinding was done in the interest of the Federal government and the American Automobile Association and commenced in New York on June 11th last with a run to Seattle over what is known as the "Northwest Trail," taking in Buffalo, Chicago, St. Paul and Minneapolis and including connections to Yellowstone National Park and Glacier Park; this part of the trip covered 4,196 miles and was completed on August 7th. Following the 1,016-mile trip down the Pacific Coast from Seattle to Portland and San Francisco, the return trip from the last named California city to New York was started over the "Overland Trail" through Salt Lake City, Cheyenne, Omaha and Chicago, New York being reached on October 3d, with 3,919 miles more to the credit of the Pathfinder. After a short stop in the Eastern metropolis, the third trip across the continent was started over the "Midland Trail" through Philadelphia, Pittsburgh, Indianapolis, St. Louis, Kansas City, Denver, Salt Lake City to Los Angeles, which was reached on November 25th, the mileage of the last leg being 3,547, or 12,678 miles in all.

Freeport Motor Club Elects Officers.

At the annual election of officers of the Freeport (Ill.) Motor Club, H. Tarbox was elected to the presidency. J. Daniels, Seth Scott and F. N. Pellett are the new vice-president, treasurer and secretary, respectively. The board of directors comprises John Lamm, Adam Marker, Roy Nelson, Henry Brockmeier, J. G. Woker.

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1,020,450. Vehicle Wheel. Charles J. Sandrik, East Pittsburgh, Pa. Filed Sept. 7, 1910. Serial No. 580,825. Solid rim with resilient supporting members.

1,020,464. Automobile Tire. Winfield Scott Temple, Sidney, Ill. Filed Sept. 28, 1910. Serial No. 584,347. Combination of hoop and helical springs in a tire casing.

1,020,472. License Tag for Motor Vehicles. William G. Anderton and Claude S. Jarvis, Philadelphia, Pa. Filed Sept. 20, 1910. Serial No. 582,830. Combined tag and lamp support.

1,020,478. Wheel Rim. Israel J. Carpenter, Marlboro, Mass. Filed Apr. 4, 1911. Serial No. 618,886. Springs positioned between rim and tire.

1,020,489. Anti-Skid Grip. Leonard B. Gaylor, Stamford, Conn. Filed Oct. 17, 1911. Serial No. 655,234. Cross members provided with ends at right angles to and in the same plane with the central portion.

1,020,503. Ignition Device. Delos Holden, Upper Montclair, N. J. Filed June 20, 1907. Serial No. 379,825. High tension plugs in multiple, and means for shortening gaps to cause spark in any single plug.

1,020,535. Sectional Valve for Gas Engines. Lupu William Brenner, Dayton, Ohio. Filed May 26, 1911. Serial No. 629,639. Valve made in two parts, one section operating before the other.

1,020,607. Motor Truck. Charles W. Hunt, New York, N. Y.; Katharine H. Hunt, Charles Wallace Hunt, and George S. Humphrey, executors of said Charles W. Hunt, deceased. Filed Dec. 30, 1910. Serial No. 600,008. Motor on an independent frame and arranged so that its weight in full is borne by driving axle.

1,020,665. Auto-Vehicle Dump Box. Fred T. Sherman and Herman Goetz, Seattle, Wash. Filed Mar. 7, 1911. Serial No. 612,968. Doors that open when body is shifted rearwardly.

1,020,678. Wheel Rim. Frederic Rutherford Barker, Boston, Mass. Filed Mar. 21, 1911. Serial No. 615,916. Demountable wheel rim.

1,020,729. Ball Bearing. Gustavo Vincon, Turin, Italy. Filed Feb. 16, 1909. Serial No. 478,145. U-shaped channel ball retainers.

1,020,737. Friction Clutch Having Removable Wearing Surfaces. Herbert Austin, Barnt Green, near Birmingham, England. Filed June 1, 1909. Serial No. 499,430. Plates of frictional material, adapted to be replaced in sections.

1,020,766. Valve Stem and Head Therefor. Levi E. Lowe, Columbus, Ohio. Filed Oct. 8, 1910. Serial No. 585,936. Means of retaining valve spring in centered position.

1,020,768. Alarm Signal Device. Ray H. Manson, Elyria, Ohio, assignor to The Dean Electric Company, Elyria, Ohio, a Corporation of Ohio. Filed May 10, 1911. Serial No. 626,216. Method of constructing electric signal.

1,020,797. Vehicle Wheel Rim. Heinrich Bussing, Brunswick, Germany. Filed Mar. 18, 1911. Serial No. 615,400. Quick detachable bolted on rim.

1,020,799. Safety Crank for Explosion Engines. William R. Clark, Muncie, Ind. Filed Dec. 10, 1910. Serial No. 596,571. Cam action which ensures disengagement on reverse movement.

1,020,819. Explosive Engine. Anders Hanson, Butler, S. D. Filed Dec. 17, 1910. Serial No. 597,806. Parallel cylinders with double pistons.

1,020,836. Piston for Expansion Engines. Robert S. Moore, Washington, D. C., assignor to Gyro Motor Company, Washington, D. C., a Corporation of the District of Columbia. Filed Sept. 7, 1911. Serial No. 648,222. Annular groove cut in the head close to the edge.

1,020,856. Automatic Gasolene Dispenser. Richard Toennes, Boonville, Mo. Filed Feb. 3, 1911. Serial No. 606,441. Pivoted measuring container and means for operation.

1,020,879. Lifting Jack. Glen Russell Booth, Chana, Ill. Filed Apr 1, 1911. Serial No. 618,398. Rack and double pawls.

1,020,885. Wheel Hub Plate. Matthias Christman, Springfield, Mo., assignor of one-third to Harry L. Bissett and one-third of George A. McLaughlin, Springfield, Mo. Filed Oct. 31, 1911. Serial No. 657,737. Plate bedded in recess in wheel hub.

1,020,915. Float Feed Carburetter. Elden P. Lamb, Camden, Me., assignor to Camden Anchor-Rockland Machine Company, Rockland, Me., a Corporation. Original application filed Aug. 30, 1909, serial No. 515,239. Divided and this application filed June 15, 1910. Serial No. 567,042. Eccentric pin through float lever provides means of adjustment.

1,020,931. Carburetter. Clement Smith, Topeka, Kan. Filed Nov. 3, 1910. Serial No. 590,490. Fuel supply controlled by suction operated valve.

1,020,953. Internal Combustion Engine. William H. Ogden, Binghamton, N. Y. Filed June 20, 1911. Serial No. 634,385. Rotary cylinder motor with compressing piston.

1,020,967. Starting Mechanism for Hydrocarbon Engines. Fred Dettman, West Dundee, Ill. Filed Dec. 13, 1911. Serial No. 665,453. Means for preventing kick-back of the starting handle.

1,020,977. Vehicle Wheel. Luther L. Gregg, Jr., Lonejack, Mo. Filed Dec. 5, 1910. Serial No. 595,715. Helical springs between inner rigid rim and outer yieldable rim.

1,021,001. Magneto-Electric Device. Homer N. Montsinger, Pendleton, Ind., assignor to Montsinger Device Mfg. Co., Pendleton, Ind., a Corporation of Indiana. Filed Oct. 18, 1910. Serial No. 587,706. Means for causing armature movement that is constant, no matter what the speed of the motor.

1,021,030. Power Transmission Device. Dalton K. Wilson, Waterloo, Ia., assignor to William Galloway Co., Waterloo, Ia. Filed Aug. 26, 1910. Serial No. 579,061. Modified planetary gear positioned on the rear axle.

1,021,031. Igniting Mechanism for Explosive Engines. Alexander Winton and Harold B. Anderson, Cleveland, O., assignors to the Winton Motor Carriage Co., Cleveland, O. Filed Aug. 4, 1905. Serial No. 253,742. Means for causing spark in the proper cylinder for starting the motor.

1,021,036. Speedometer. Leon E. Blanchard, Boston, Mass., assignor to Reliance Speedometer Co., Boston, Mass., a Corporation of Maine. Filed Feb. 24, 1910. Serial No. 545,685. Means for transmitting motion from movable collar of centrifugal governor to the indicating needle.

1,021,039. Carburetter for Internal Combustion Engines. Gogu Constantinescu, Bloomsbury, London, Eng. Filed Aug. 21, 1911. Serial No. 645,250. Combined muffler and vaporizer for carburetting heavier hydrocarbons.

1,021,061. Motor Vehicle. Hiram P. Maxim, Hartford, Conn., assignor to the Waverley Co., Indianapolis, Ind., a Corporation of Indiana. Filed Feb. 27, 1908. Serial No. 418,056. Motor and transmission mounted on a shiftable frame.

1,021,079. Mixing Attachment for Carburetters. Alfred C. Stewart, Los Angeles, Cal. Filed Oct. 31, 1910. Serial No. 590,040. Combined trap for molecules of liquid which come from the carburetter and atomizer for vaporizing same.

1,021,171. Tread for Pneumatic Tires Frederick G. Ward, Pittsburg, Pa., assignor of one-third to Harry Davis, Pittsburg, Pa. Filed April 19, 1907. Serial No. 369,140. Tread formed by embedding helicals in the rubber.

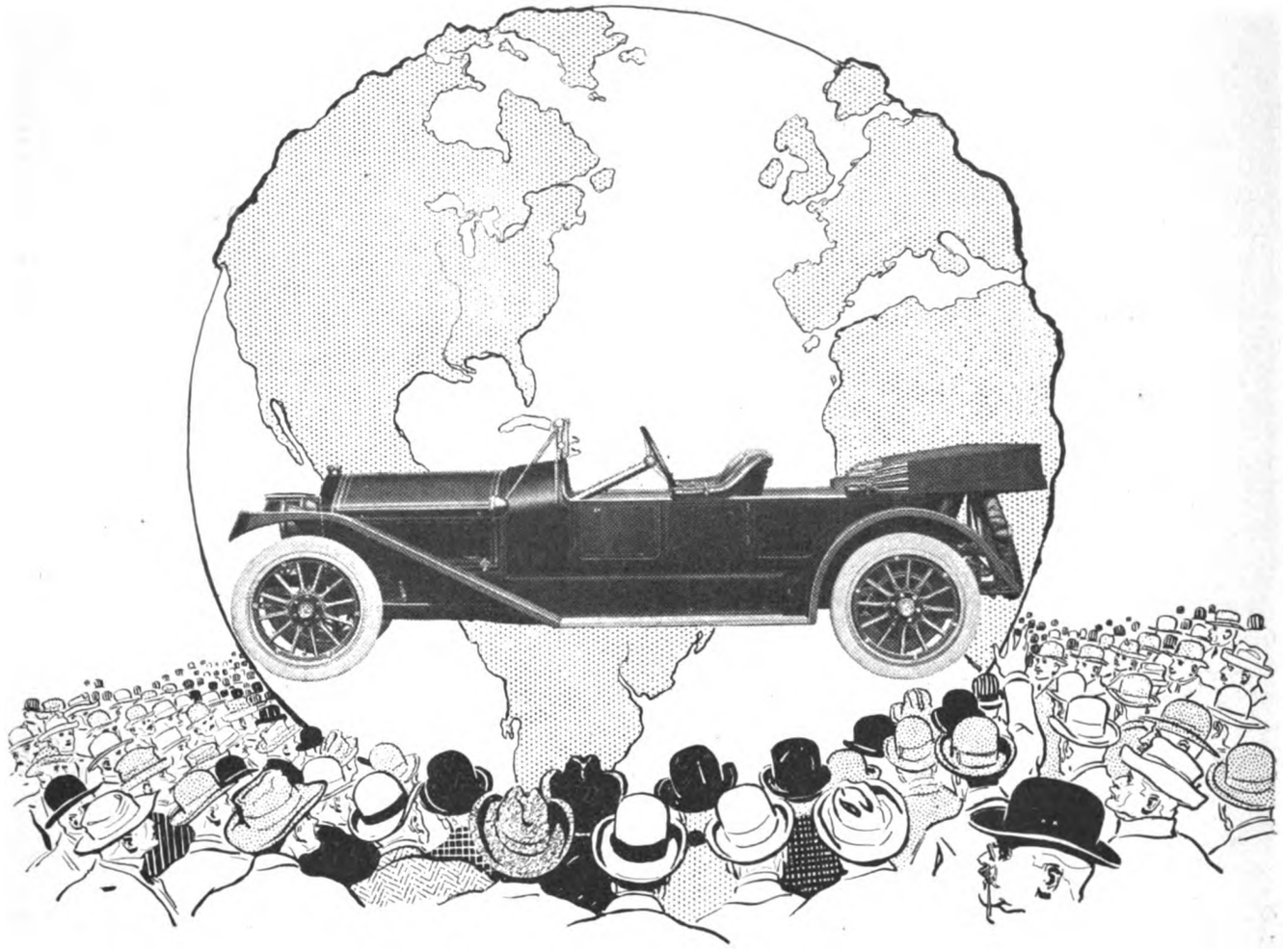
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National

International Champion

Dealers: Why Pay for Experiments? The National Is *Sure*



Search the World Over—You Cannot Find Greater Value

Long stroke (4⅞x6) flexible and noiseless Motor with enclosed valves.
Left Side Drive.
Center Control.
Gray & Davis Electric Starter, easily operated by simply touching a button with foot.
Gray & Davis Dynamo Electric Lighting System.
Bosch dual double Magneto.
12-inch Turkish Upholstery.
Full heavy nickel Trimmings.
Electric Horn.
Adequate Baggage-carrying Compartment concealed in body but easily accessible.
Powerful and reliable Brakes.
Spacious Interior.
Tire Pump, integral part of the motor. Inflates a tire in three minutes.
128-inch Wheel Base.
Adjustable, ventilating and rain vision Wind Shield.
Multiple jet Carburetor
Hoffecker steady-hand Speedometer.
Truffault-Hartford Shock Absorbers in rear.
Tire Carrier in rear.
Silk mohair Top, Cover and Curtains.
Full-floating Rear Axle.
Resilient Springs, ¾ Elliptic in rear; Semi-Elliptic in front.
Large gasoline pressure-feed Tank with Gauge in rear.
Robe Rail and Foot Rest.
Foot Mat in Running Board.
Plain, continuous enclosed Metal Guards.
Easy riding qualities, unexcelled.
Oiling System, demonstrated to be only perfect oiling system.

When Owners Talk Like This—

"For 10,000 miles—ever since I bought it—my National "40" has been running like a clock. It is the very essence of distinctiveness, comfort and power. I consider it the last word in motor efficiency"—and this man has the money to buy any car on earth.

Dealers Make Money

We can supply you with more letters like this and better. They are great selling aids. The dealer's largest asset is satisfied customers. They influence sales for you—they keep you in business year in and year out.

NATIONAL MOTOR VEHICLE CO., Indianapolis, Ind.
Please send me at once your Improved Series V catalog and dealers' proposition.
Name.....
Address.....

Improved Series V, Five Models, $2750 to $3400

QUICK DELIVERY

National Motor Vehicle Company, Indianapolis, Ind.

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The United States Tire Company

wishes each and every motorist and dealer in the country a

Merry Christmas

and a New Year so filled with happiness and prosperity that at its close he can say from the bottom of his heart

"Tire-ly Satisfied."

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There Are No "Just As Good" Imitations of the

GLBA

SELF STARTING AND LIGHTING BATTERY

Use the Class A GLBA Battery with an Electric Lighting Generator
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Willard Storage Battery Company
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The Atwater Kent Ignition System

DEALERS and REPAIRMAN

HERE are a few good Atwater Kent "talking points." You can make them make you money.

Its simplicity of mechanism—no vibrators, relays, or commutator—just one contact point regardless of the number of cylinders and only three moving parts, none of which are subject to excessive wear.

Its single adjustment easily and quickly made and seldom requiring attention.

Its adaptability and easy installation on any standard make of motor, new or old.

It is ideal for use in connection with lighting and starting equipment as it produces a hot dynamic spark, perfectly timed regardless of the engine speed.

While the Atwater Kent System is high in value and reputation, it is not high in price. In fact, it will cost less than half as much as a good magneto and will give superior results at a much less cost of upkeep.





There are now two types of Atwater Kent Ignition equipment—standard **Type F** and the new **Type K,** the latter having the automatic spark control and insulated primary circuit features.

PRICES OF THE TYPE F SYSTEM

	Standard Coil.	Kick Switch Coil.
1-cylinder	$17.00	
2-cylinder opposed	18.00	
2-cylinder distributor type	22.00	$24.00
3-cylinder distributor type	25.00	27.00
4-cylinder distributor type	25.00	27.00
6-cylinder distributor type	27.00	29.00

PRICES OF THE TYPE K SYSTEM

	Standard Coil.	Kick Switch Coil.
2-cylinder	$32.00	$35.00
3-cylinder	35.00	38.00
4-cylinder	35.00	38.00
6-cylinder	37.00	40.00

In substituting the Atwater Kent System for the magneto or for driving it from any horizontal shaft or gear, we furnish a special magneto gear mounting, the additional price of which is $5.00.

You will have many inquiries for ignition equipment during the coming year and should be in a position to recommend the Atwater Kent whenever the most efficient ignition is desired.

Seize the opportunity and post yourself by a visit to our exhibit No. 140 Madison Square Garden Show, New York City, or write for our booklet "D."

ATWATER KENT MFG. WORKS

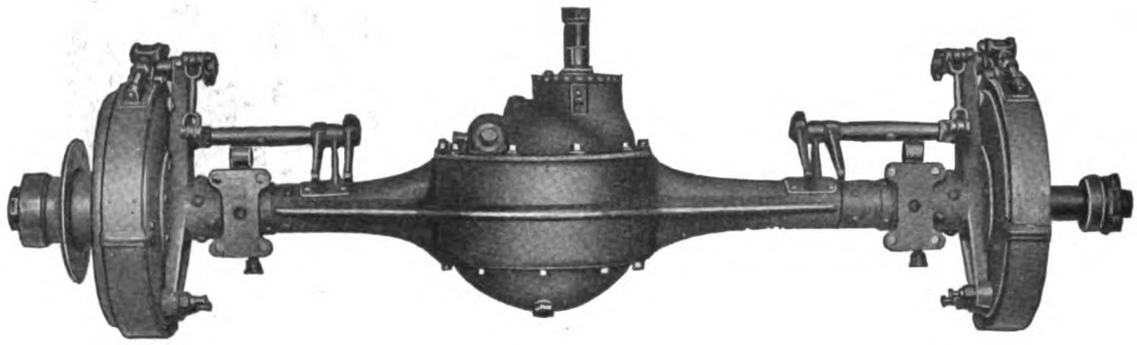
4934 Stenton Ave. Philadelphia, Pa.

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American American

American Axles

Won't Rob Your Electric's Battery



The less current demanded to turn over your axles, the more power you have for mileage.

No electric car buyer can ignore that great truth, simply stated.

American Axles have proved that they conserve and transmit the maximum of power that any power can give.

Ample evidence for you lies in the fact that *American Axles* are actually in use on eighty per cent. of the electrics in this country.

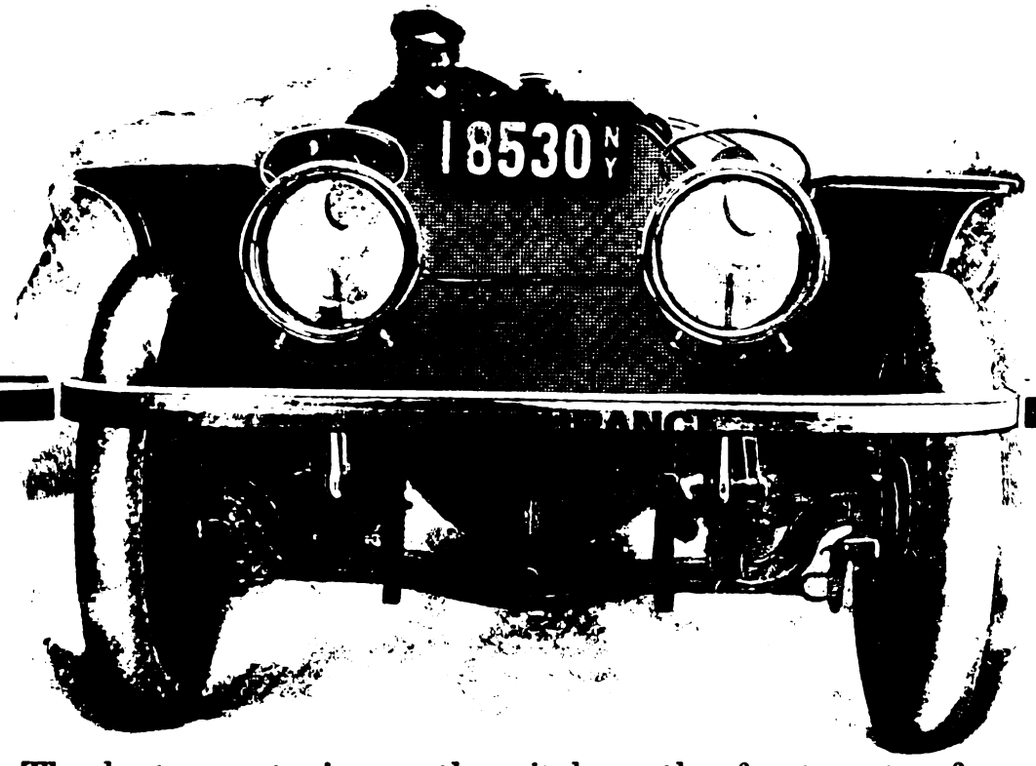
The option of Bevel Drive or Lanchester-Daimler Worm Gear can be had with American Axles only.

THE AMERICAN BALL BEARING CO.

Edgewater Park and L. S. & M. S. Ry. CLEVELAND, OHIO

American

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The best way to insure the vital, costly, front parts of your car is to prevent the damage altogether—not to collect for it after it is done.

No delay then while your car is in the repair shop; no loss in dollars outright if the appraisement of damage done falls below $25.00.

The Conover Safe-Guard protects these parts—*absolutely.*

It is a broad, massive channel-bar supported at four points by sturdy, semi-elliptical springs of finest chassis steel.

Before a lamp, fender, radiator, axle or spring can even be scratched, this powerful barrier must be broken.

The makers back the Conover Safe-Guard with an *unreserved* guarantee—a replacement free if broken any time within a period of two years.

Don't compare the Conover with the ordinary "pipe" bumper. It is a *new* protection—new in sightliness as well as in strength.

You cannot completely and satisfactorily insure your car without the Conover Safe-Guard.

Your car is worth it.

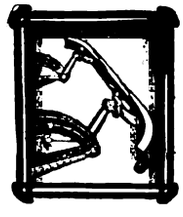
Best quality of steel heavily enameled in black, royal blue, French gray or maroon; bar 2 inches wide. **$15.00**
(Any other color of enamel $5.00 extra)

Best quality of steel, brass or nickel plated; bar 2 in. wide - - - **$17.50**

Solid bronze, finished in either brass or nickel; bar 2 in. or 2¾ in. wide **$25.00**

Shipped, express paid, anywhere in the United States, on thirty day's trial, upon receipt of the regular price. When ordering, give name and model of car. Specify size and finish desired.

An attractive booklet will be sent free upon request.



LOWELL-McCONNELL MFG. COMPANY
Makers of Newark, N. J.

NEW JERSEY TUBE COMPANY
Makers of Newark, N. J.

CONOVER

The Dependable Safe-Guard



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1913 Motorcycle Shows

and what the Bicycling World and Motorcycle Review will do in connection with them.

New York Show

will be held in connection with the Automobile Board of Trade Annual Show in Grand Central Palace, under auspices of the Motorcycle Manufacturers' Association

January 11-18

We will publish two big issues in connection with this show.

New York Forecast Number
January 7

New York Report Number
January 14

The Chicago Show

will be held at the Manufacturers' Exhibition Bldg., 1319 Michigan Avenue, and will be conducted under the auspices of the Motorcycle Manufacturers' Association

February 3-8

Two special issues will be published descriptive of this show.

Chicago Forecast Number
February 4

Chicago Report Number
February 11

We are ready now to book reservations of space for all or any of the four above described numbers of **THE BICYCLING WORLD AND MOTORCYCLE REVIEW**, and our service department is now preparing copy and sketches for our advertisers' use in these big issues. Each of the Show Numbers will have extra circulation without increase in price of space and our regular advertisers may use extra space on their contracts at minimum rates. This is a splendid opportunity of which the entire trade should take advantage.

Copy and cuts can be handled one week in advance of each publication date, but we recommend reservation now and an early preparation of copy. Can we help you with this copy? And how much space can we reserve?

BICYCLING WORLD AND MOTORCYCLE REVIEW
1600 Broadway **New York**

New York *and* Chicago

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NATIONAL

AUTOMOBILE SHOW

In Two Buildings For Two Weeks



Grand Central Palace

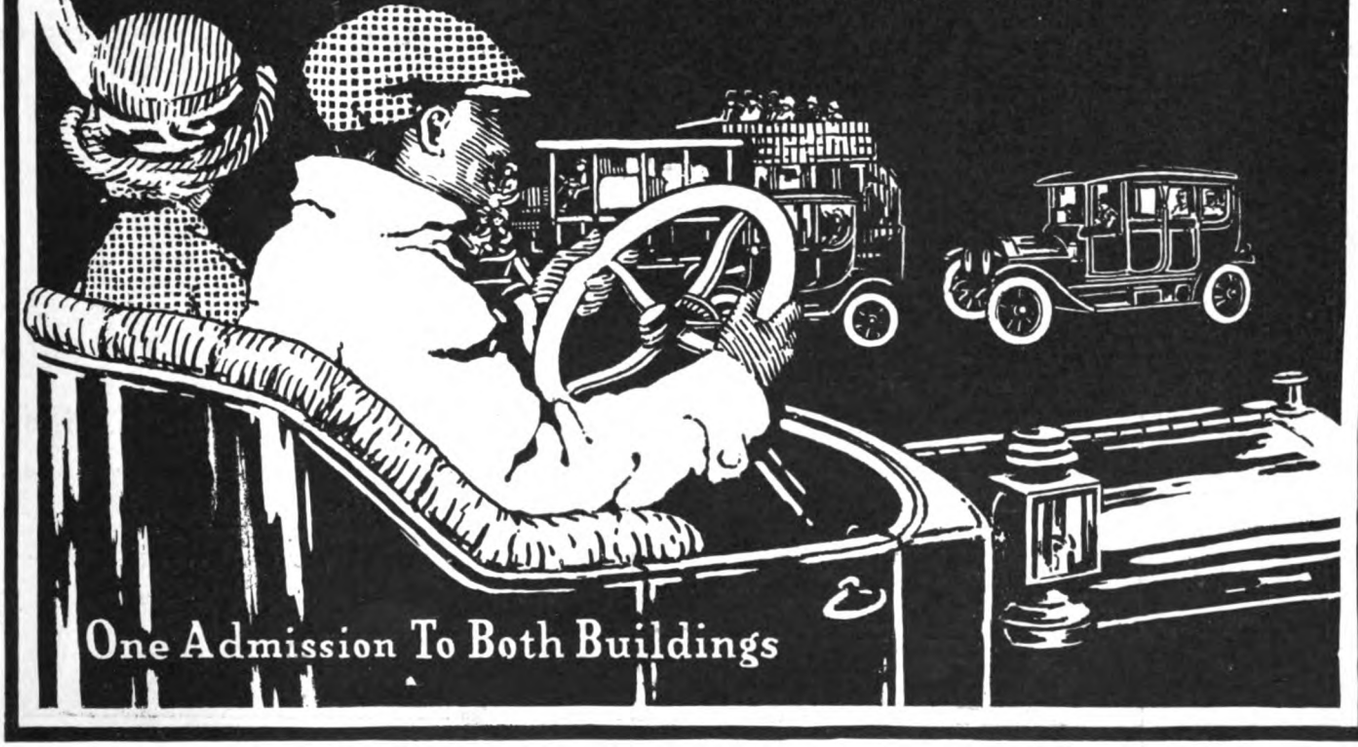
Lexington Avenue 46th-47th St



Madison Square Garden
Madison Ave, 26th-27th St

January 11 to 18
Pleasure Cars
(Gasoline and Electric)
Motorcycles
Parts and Accessories

January 20 to 25
Commercial Cars
(Gasoline and Electric)
Parts and Accessories



One Admission To Both Buildings

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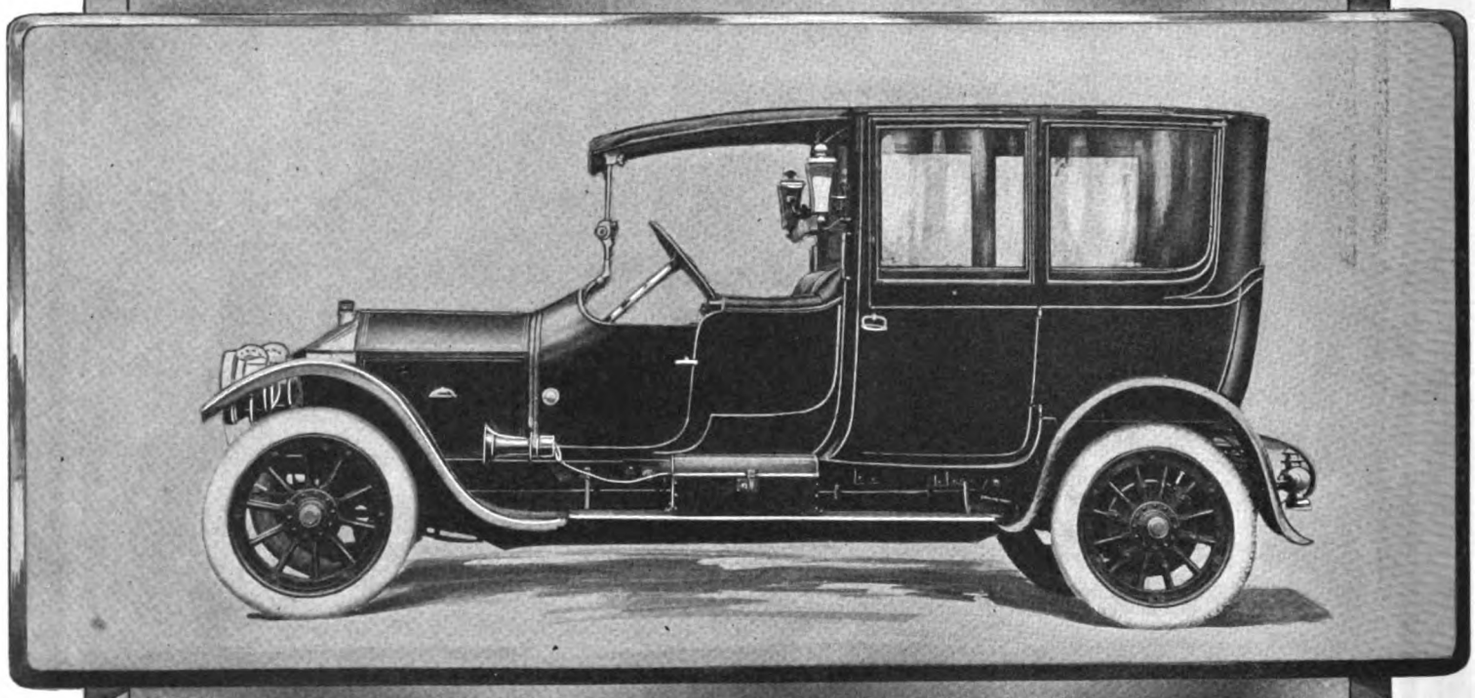
Exclusive in any Community

METALLURGIQUE

Will Sell in Your Community

DEALERS

The European Car Idea is Growing in America — is your Ear to the Ground



Dealers who read this announcement will do well to consider the advisability of forming an agency connection with us for handling the Metallurgique—a car for the classes—a distinct and exclusive product, sensational in body design, equipment and appointment. These cars are limited in quantity—unlimited in quality.

Fro mthe radiator of unique design to the end of the rear springs—from tire to top, this powerful, unbreakable car offers value in service away beyond that of any other European or any American product. There is a selling argument in every item from steering knuckle to engine.

Luxury of appointments are regal—beauty of design and finish supreme on both sides of the water. Service unlimited.

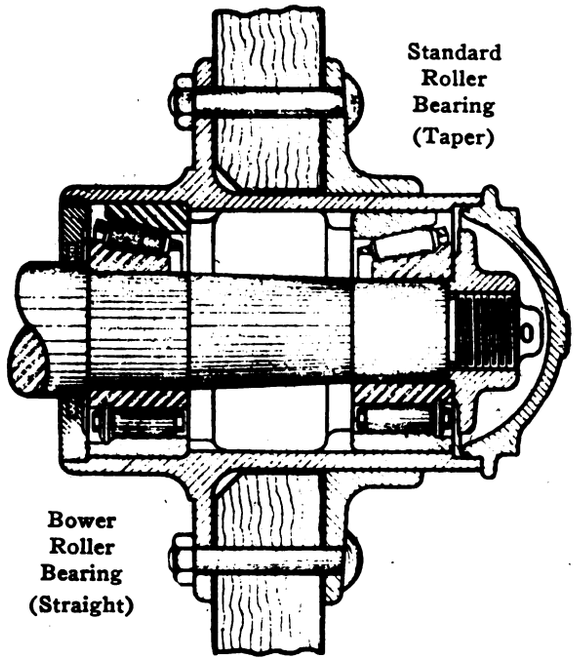
The Metallurgique is the only logical car for men of wealth and position who desire an equipment that will make all others appear commonplace.

Let us help you find and pleas and sell to those in this class. As a preliminary, write and get the literature and terms. We can throw more light on the Metallurgique, Europe's choicest product.

THE METALLURGIQUE MOTOR CO., 1934 Broadway, New York

W. C. and H. N. Allen, Proprietors

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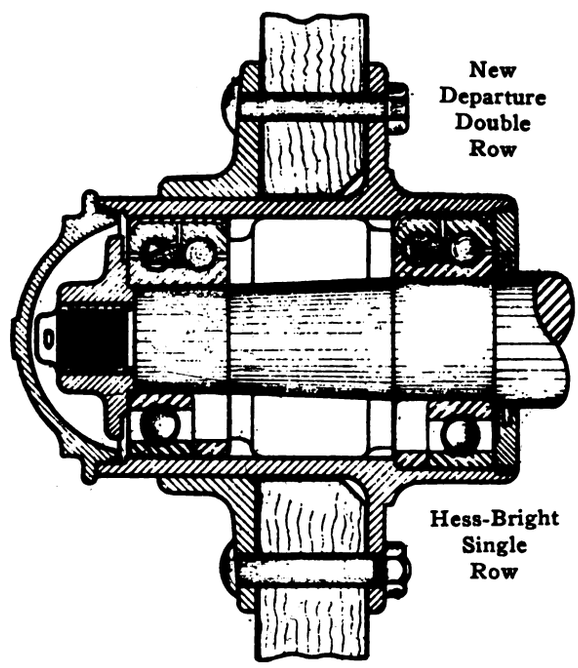
SHELDON

The axles that come equipped with a choice of the finest bearings.

It's one thing to make axles equipped with one type of bearing. It's another thing to make axles of splendid mechanical construction adapted to every possible use.

The Sheldon Axle Company offers in its most complete line of excellently constructed axles for 1913, Steel Wheels, or hubs for wood wheels, with your choice of the following high class bearings:

Standard Taper Roller Bearings
Bower Straight Roller Bearings
Rhineland Double Row Annular Bearings
New Departure Double Row Annular Bearings
Hess-Bright Single Row Bearings
New Departure Single Row, Radax or Norma Ball Bearings



See Our Exhibit at Space 321, Madison Square Garden Show.

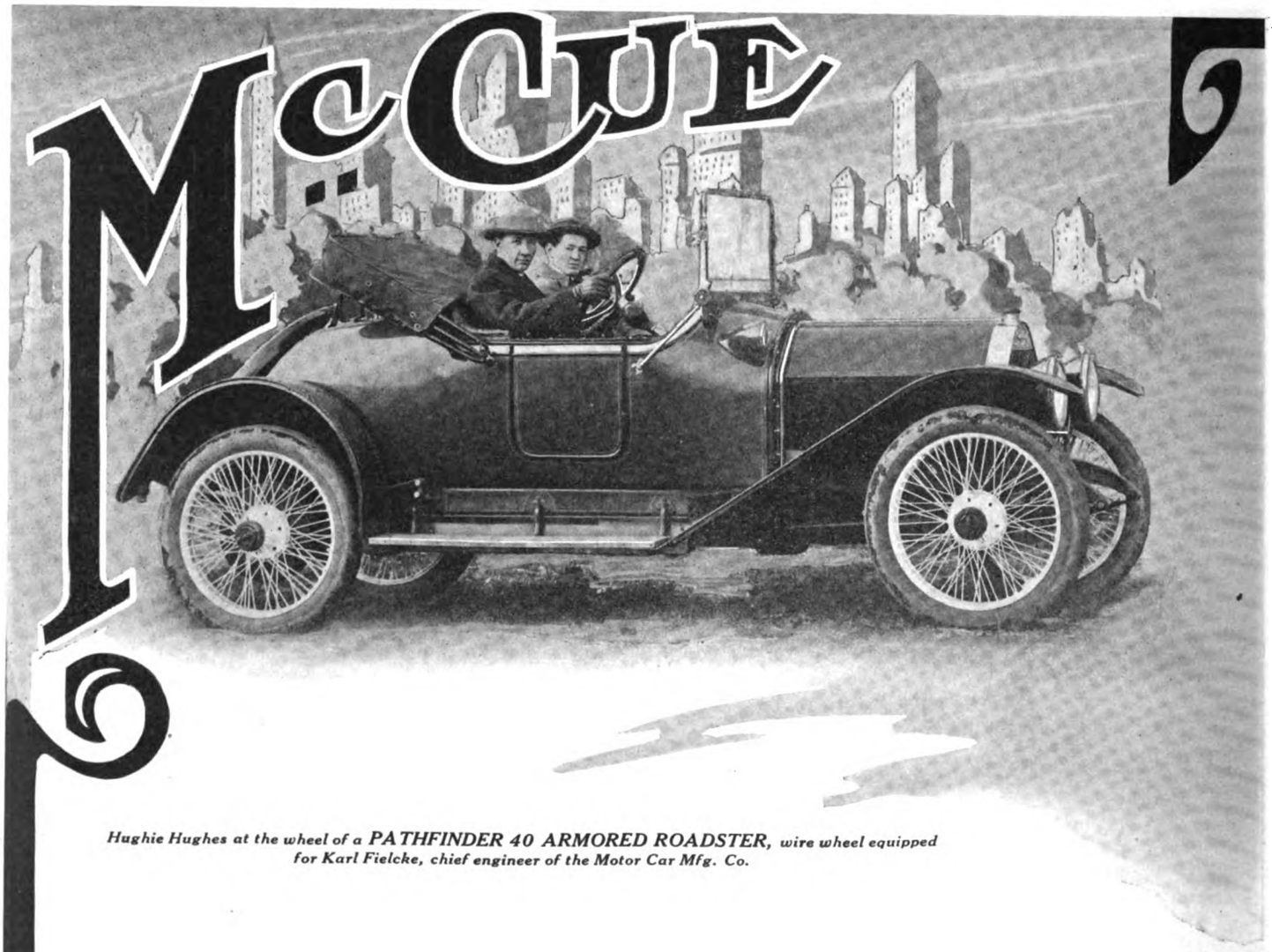
SHELDON AXLE CO.

Wilkes-Barre, Pa.

Chicago Branch
68 East 12th Street

Detroit Branch
1215 Woodward Avenue

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Hughie Hughes at the wheel of a ***PATHFINDER 40 ARMORED ROADSTER,*** *wire wheel equipped for Karl Fielcke, chief engineer of the Motor Car Mfg. Co.*

Are you doing your share, Mr. Dealer, toward getting wire wheels on the cars you sell? If you're not, then you're standing in your own light. For there's a glorious opportunity for progressive dealers throughout this country because of this wire wheel situation.

Wire wheels are going to be demanded and insisted upon by the consuming public just as surely as this advertisement is being published. Wise manufacturers know this and many of them are getting ready, or rather are getting in advance of the procession. And the products of those wise manufacturers will sell *first.*

If your manufacturer hasn't heard the noise yet, get out your trumpet and herald the tidings to him—the tidings of wire wheels. Tell him that you won't handle a slow moving proposition. Remember what the lack of fore doors did to a few unheeding manufacturers. The lack of wire wheels will do worse.

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WIRE WHEELS

Wire wheels have come into their own purely and simply on their merits. Don't make any mistake about that. They have actually beaten down every other type of wheel by sheer superiority—nothing else. They increase tire life over any and every other type of wheel. They make the car easier riding. They make it cost less to operate. They make the car as well as the tires live longer. They are stronger in every conceivable way than any other practical type of wheel—and greatly stronger than wooden wheels of any sort.

McCue Wire Wheels are equipped with the most practical Q. D. rims ever placed upon the market. These rims are so constructed that the tire does not come in contact with the spoke nipples. They also may be used interchangeably for either clincher or straight side tires.

McCUE AXLES

McCue Axles and McCue Wire Wheels form the most advanced combination that could be placed upon any motor car. You're selling force will be greatly assisted by this combination. However, McCue Wire Wheels can be used upon any axle made. Send for "Mileage Plus."

THE McCUE COMPANY, Buffalo, N. Y.

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Lancia

AMERICA'S FAVORITE EUROPEAN CAR

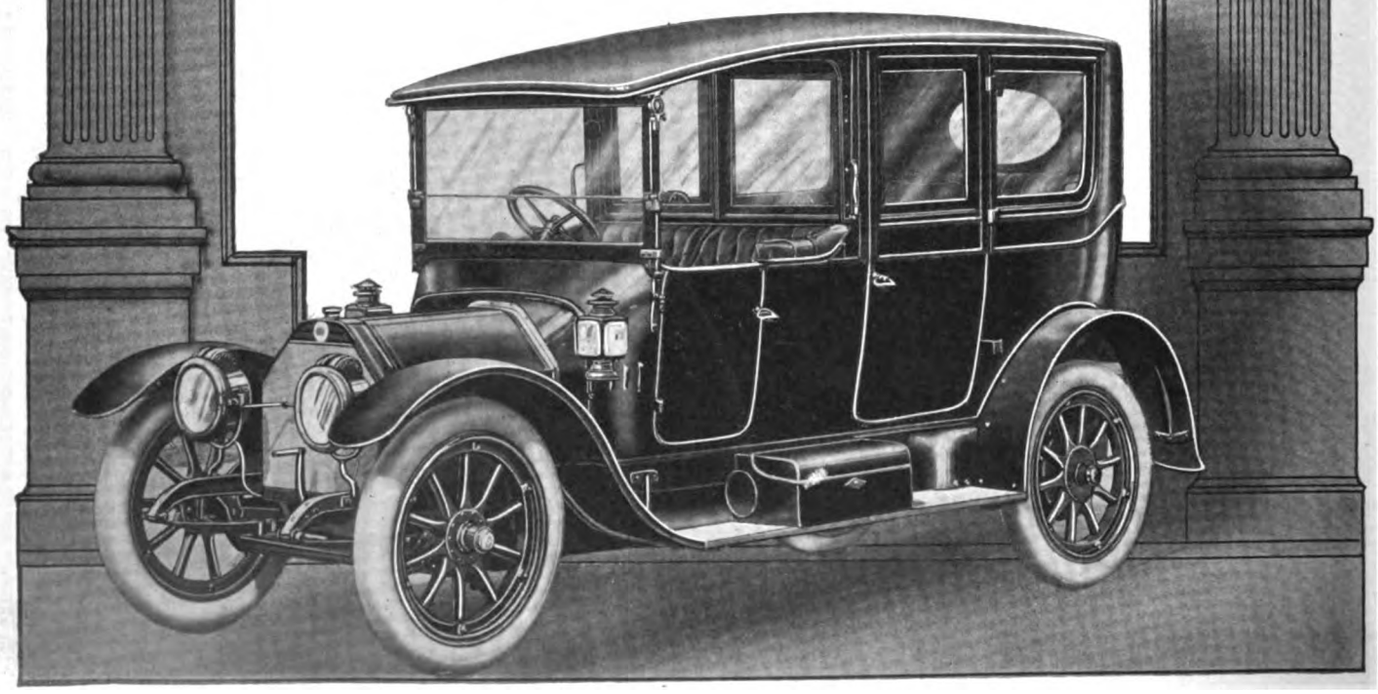
LANCIA DEALERS KNOW

That there is a large and ever increasing buying interest developing in this country for the European car at American prices—but it is patent that the average foreign automobile is extravagantly priced on this side.

The Lancia is the one car to prove its actual European superiority over American cars of equal price—and this added value in strength, durability, silence and speed (coupled with its unusual lines) will make friends and customers for **you,** Mr. Dealer, among the elite in your territory.

We will show you, on demand, the finest selling arguments that ever surrounded a high grade car. Write and ask us to prove our contentions.

THE ADAMS-LANCIA CO.
238 West 38th Street New York



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SCIENCE Supports our Claims

The WARD LEONARD SYSTEM

The Ward Leonard automatic dynamo lighting and starting system of to-day is fundamentally and scientifically correct. It is perfect both mechanically and electrically.

What the electrical engineers knew to be right and standard, we used in our systems. What they did not know, we showed them, and today the Ward Leonard Lighting and Starting System has the approval of experts, the support of science and the commendation of users.

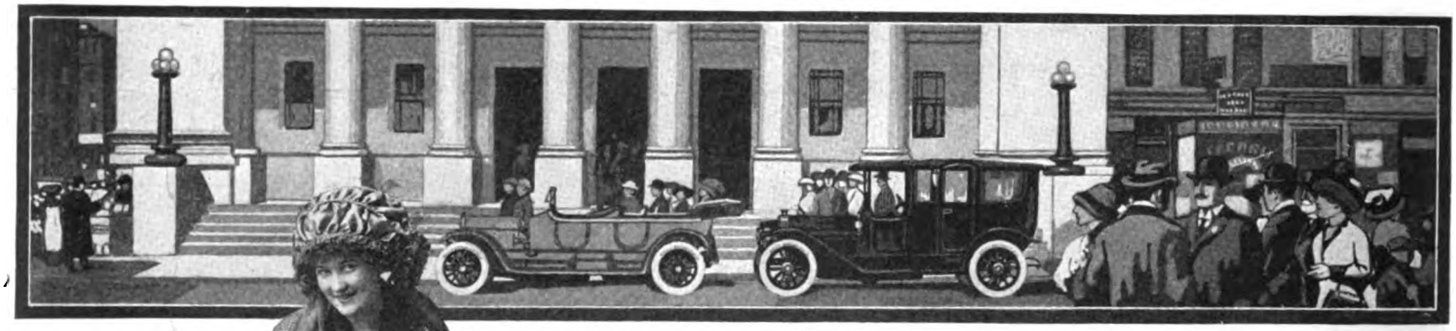
Our lighting and starting system is automatically perfect, is simple, light in weight and *it does not go wrong.*

WARD LEONARD ELECTRIC CO.
BRONXVILLE, N. Y.

103



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Put a poor tire on a good automobile and you get—a poor automobile.

The serviceability of a motor car is measured more than anything else by the serviceability of its tire equipment—just as a soldier's efficiency depends more on his feet than on his marksmanship.

Kelly-Springfield Automobile Tires have behind them seventeen years of rubber tire making experience. What these seventeen years stand for is shown pretty clearly in the fact that the average mileage given by Kelly-Springfield Tires exceeds by a thousand or two the average mileage given by tires of other makes.

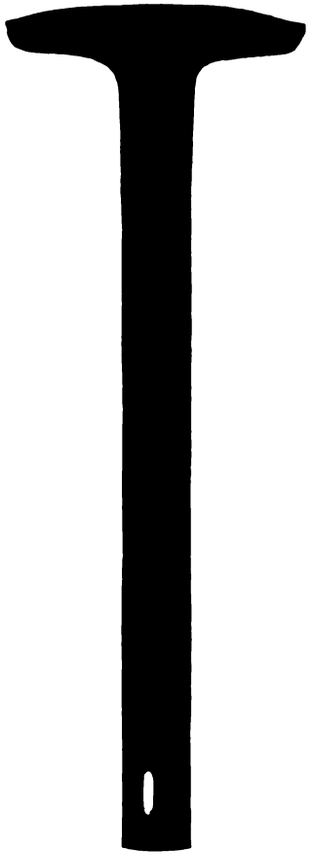
And tire mileage means car mileage.

Kelly-Springfield
Automobile Tires

Kelly-Springfield Tire Company, 20 Vesey Street, New York

Branch Offices in New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles, Buffalo, Baltimore, Seattle, Cleveland, Atlanta, and Akron, O.

Boss Rubber Co., Denver, Colo.
Bering Tire & Rubber Co., Houston, Texas
Southern Hdwe. & Woodstock Co., Ltd., New Orleans, La.
Atkinson Tire & Supply Co., Jacksonville, Fla.
Savell Davis Rubber Works, Augusta and Savannah, Ga.
C. D. Franke & Co., Charleston, S. C.
Todd Rubber Co., New Haven, Conn.
The Hearn Tire & Rubber Co., Columbus, Ohio



THINK THIS OVER very carefully and read it twice, if necessary.

Is there any part of an automobile engine, or any other gas engine, that is more important to its efficiency than a Valve?

Your engine leaves the factory running smoothly and sweetly—tuned up to its highest power. Perhaps the valves pit—warp—go out of shape—fail to hold compression. Then the power diminishes, and what can be more aggravating to the driver, who has known the fullness of the pulling power of his motor, than to have it grow less and less?

You cannot slight this part by putting in an inferior product—valves that will give trouble, or even break from inexperience in their manufacture—valves of unsuitable material, not suitably heat treated.

Too much is at stake, and a slight extra cost at the outset, which is the exception, may save you many times over a probable later expense.

This Company, with the experience of many years as a guarantee, will furnish you with properly made valves, of the materials best adapted to your requirements.

Not only QUALITY, but efficient SERVICE is a factor—surely there is a satisfaction in getting the kind of work you want—when you want it.

THE ELECTRIC WELDING PRODUCTS COMPANY
CLEVELAND, OHIO

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Sell just one or two Warm Hand Wheels in your locality—they'll sell dozens more for you without effort on your part.

With the refining of motor cars—as now demanded by a discriminating public that must be sold—naturally comes the question of heating the driver and the car.

With this question comes the Warm Hand Wheel as the solution of the problem of keeping the person driving the car warm and comfortable, six months of the year.

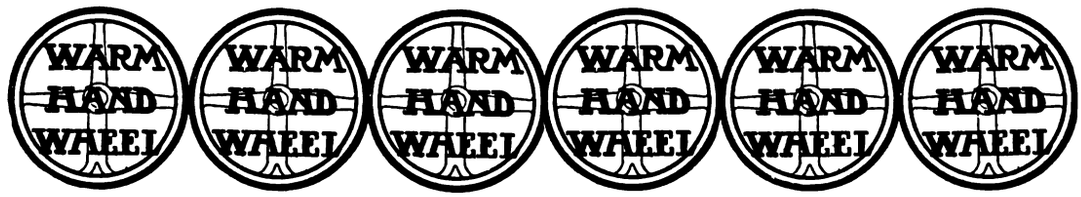
The Warm Hand Wheel is a device or steering wheel heated by the electricity supplied either by a storage battery or electric lighting or starting outfit. It can be put on any car with the greatest of ease and at the slight cost of $15 retail.

On Ford cars this Warm Hand Wheel is operated by the magneto in-built in Ford fly wheels. It operates perfectly with this source of current without affecting in any way the magneto in the performance of the functions for which it is built.

Really you can sell a raft of these Warm Hand Wheels in your territory right now. Remember they are necessary in most of the country for six months out of twelve—that is during both fall and spring as well as in the hard winter weather. Maybe your territory isn't closed yet. Write today and find out.

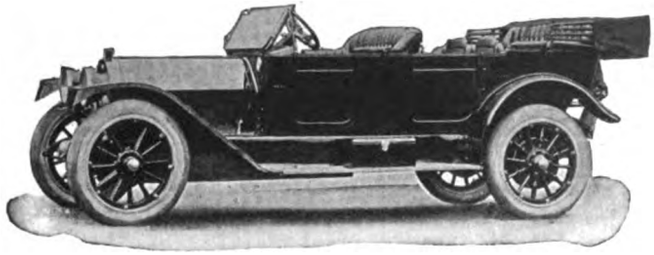
The Warm Hand Steering Wheel Company

527 Fifth Avenue **NEW YORK CITY**



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"Service and Silence"



Kline Kar Model 6-60, Touring, $3500

DEALERS

YOUR experience with other cars should tell you that it does not pay to handle a line that constantly worries the life out of you with complaints from the user, who has trouble with the machine. This user knows now that he is better off when he buys a car of quality in the first place, even though he must pay a little more for it, and he will soon begin to demand such a car of his dealer.

It is up to you to have the car in your line when he calls. The Kline Kar will answer all the requirements this prospect may impose and more.

Prices $1850 to $3500
(Fully Equipped)

Get Our Proposition

Kline Motor Car Corporation
YORK, PA. RICHMOND, VA.

AJAX TIRES

Guaranteed 5000 Miles — Guaranteed 5000 Miles

Money-Saving Tires

If you are seeking relief from tire expense—the one big expense automobilists are compelled to suffer—why not try Ajax Tires? You must have heard much about them—about our WRITTEN GUARANTEE FOR 5,000 MILES which accompanies every tire.

When you first use Ajax Tires you are astonished. You never knew so much service could be obtained from tires.

To increased tire mileage and fewer tire troubles is due the amazing success of Ajax.

DEALERS—Owing to their widespread popularity there is a splendidly profitable business for dealers in handling Ajax Tires. Communicate with us NOW.

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General Offices: 1796 Broadway, New York City
Factories: Trenton, N. J. Branches in Principal Cities

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Has Always Led

Ask us to tell you about the wonderful new pole pieces and the Automatic Control Magneto.

THE EISEMANN MAGNETO COMPANY

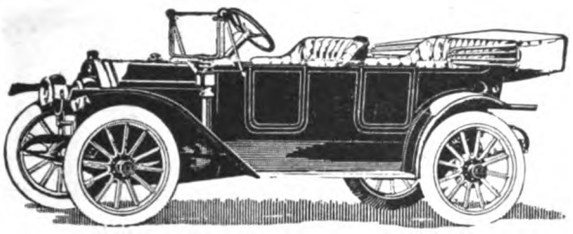
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514 N. Capitol Ave.	General and Sales Office 225-227 West 57th St.	527-528 Ford Bldg.

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Is 'Quality' past all correction"

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DEALERS

See the* EMPIRE *at

THE NEW YORK SHOW

SPACE 122

Grand Central Palace

Our open territory is going fast

Empire Automobile Company

Indianapolis, U. S. A.



"About"

has no place on the

CORBIN-BROWN SPEEDOMETER

"The Speedometer of Permanent Accuracy"

The pointer, as firm and steady as a chronometer's hand, eliminates the slightest element of doubt. It's unvarying accuracy secures for the user a feeling of absolute trust and confidence secured in no other speedometer.

Sold by leading garages and accessory dealers everywhere

CORBIN SCREW CORPORATION DIVISION
(American Hardware Corporation)
213 High Street New Britain, Conn.
BRANCHES: New York Chicago Philadelphia

"In Exchange for your empty tank, accept only a genuine Prest-O-Lite Tank, filled with genuine Prest-O-Lite Gas."

This is the message that is going to Prest-O-Lite users everywhere.

In it there is a hint for the wise dealer, as well.

You know that no imitator of the Prest-O-Lite Tank has ever successfully imitated Prest-O-Lite service.

You also know that no imitator ever made good the large claim "more gas and better gas than Prest-O-Lite.

So does your customer.

Imitations are getting harder and harder to sell. There are now mighty few dealers trying it.

Most of those who yielded to the old but ever tempting claim "More Profits" have come back home.

To the dealer who is still trying to force imitations on people who won't have them, perhaps because he has money tied up in them, we can only say:

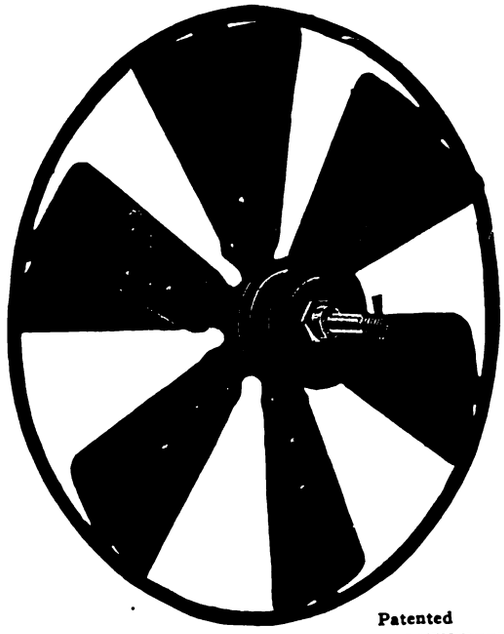
"The sooner you resume earning your good old Prest-O-Lite profit, the sooner you will make your income what it used to be."

The Prest-O-Lite Co. 287 E. South St. Indianapolis, Ind.

Branch Offices and Service Stations in all principal cities.
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More Air

With Sparks-Withington Fans, the pulling efficiency of our various sizes is exactly determined in our laboratory. This information is tabulated and gladly furnished to those interested. You know what each fan will do before you buy.

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Since the introduction of BENZ cars to the motoring public of America no car has attained such world-wide supremacy as to its construction, standing up quality, and material. The new type of 35 and 50 H. P. BENZ models are the last word in automobile construction.

The noticeable features of this type of BENZ cars include the offset crank shaft, smokeless oiler, and SILENT CHAINS instead of timing gears.

The BENZ Carrosseries are noted for their beautiful lines and thorough comfort.

To those desiring AGENCY of this car the Benz Company will offer special terms. We want RELIABLE, ENERGETIC agents to further our interests for both BENZ pleasure cars and BENZ-GAGGENAU trucks, which today stand recognized by those who know, as the leading 6-ton truck. Wire or write us, no matter where you are.

Our PRICES compete with LEADING AMERICAN makes.

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Built to Last

We are now arranging agencies for 1913.

Write for full particulars

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Send for "Milled Screw" Booklet on Special and Standard Parts.

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PERFECTION SPRING COMPANY, Cleveland, Ohio
SPECIALISTS IN **Spring Suspension** HIGH GRADE ONLY

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WARNER
AUTO-METER

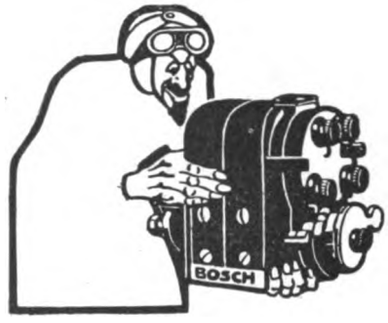
FOR 1913 the Warner Auto-Meter is the choice of the largest automobile manufacturers in the world. This coming season it will be found on over 100,000 new cars. It is the most highly developed and most accurate speed and mileage indicator the world has yet produced.

Prices from $50 to $145. For sale by dealers all over the world and at our own branches.

Handsome catalogue on request.

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BELOIT, WISCONSIN

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THE patented features of Bosch Magnetos make it impossible to imitate those mechanical arrangements that have satisfied over a million and a half Bosch Magneto users. Bosch Plugs are as good as Bosch Magnetos, of course.

Be Satisfied **Specify Bosch**

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We guarantee prompt deliveries.

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Car makers interested in the Quality and Merit that means absolute safety and satisfaction will do well to write.

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United States Motor Company
Alden-Sampson Manufacturing Company
Brush Runabout Company
Columbia Motor Car Company
Dayton Motor Car Company
Maxwell-Briscoe Motor Company

Pursuant to decree of the United States District Court for the Southern District of New York, the properties of the above companies will be offered for sale in Room 47 of the Post Office Building, Borough of Manhattan, City of New York, on

January 8th, 1913

Sealed bids will be received by receivers at their office, Broadway and 61st Street, Manhattan, N. Y., up to 10 A. M. January 8, 1913. Bids will be announced January 8, 1913, at 11 A. M., in Room 47, P. O. Building, Manhattan, N. Y. Thereupon bidders, qualifying pursuant to terms of decree of sale, may bid further until 3 P. M. of that day if and as may be permitted by the Court. For copies of decree of sale giving terms, conditions and particulars as to bids and sale and for all further information reference may be made to the undersigned. Bidders should inspect the decree of sale.

W. E. S. STRONG
ROBERTS WALKER Receivers.
Broadway and 61st Street, Borough of Manhattan, New York City.

ROSENBERG & LEVIS,
Solicitors for Complainant,
170 Broadway, Borough of Manhattan,
New York City.

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Three New Models—All Fully Equipped

4-36	4-44	6-66
$1,675	$2,150	$2,750

We are building 500 extra PULLMANS for 1913—1500 in all. Our present dealers have spoken for 1000 and the increase is for new territory—possibly yours is open. Our SALES MAKING ORGANIZATION helps the agent—let us tell you how.

PULLMAN MOTOR CAR CO., York, Pa.

Marion At the Shows

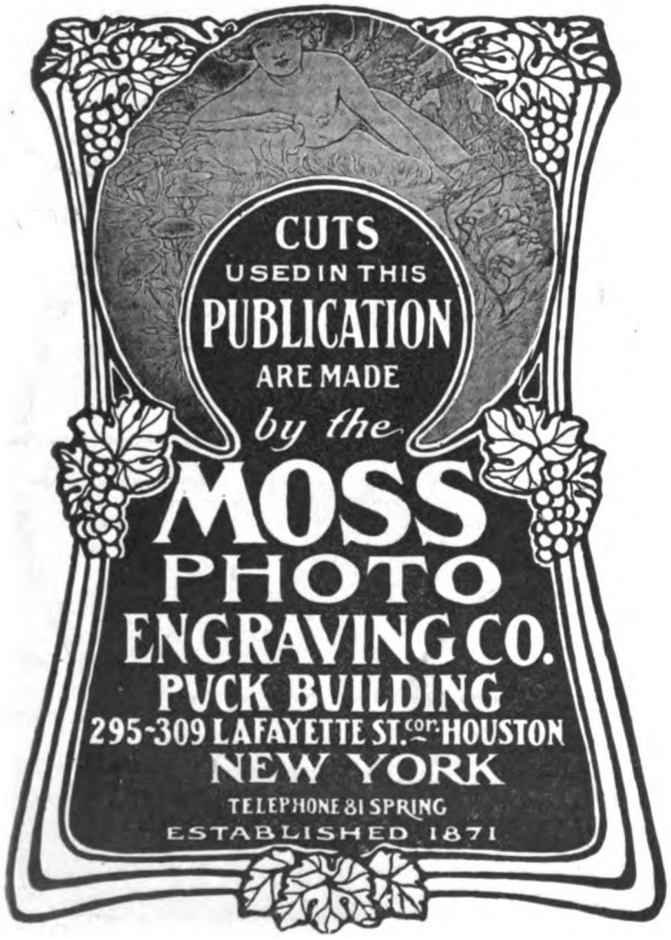
New York, Grand Central Palace
Chicago, 2450 Michigan Avenue

TOURING CARS	ROADSTERS
37-A, 30-40 H. P., $1475	36-A, 30-40 H. P., $1425
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All Cars Fully Equipped

Write for Illustrated Literature and Proposition to Dealers

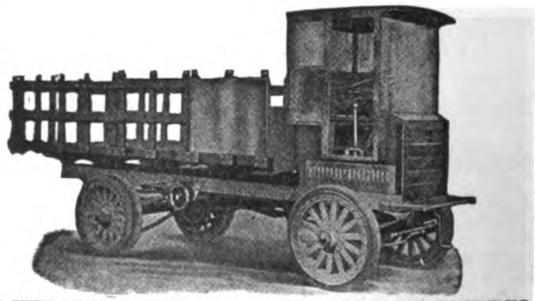
THE MARION MOTOR CAR COMPANY
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Lauth-Juergens Trucks are Delivery Insurance

QUALITY DURABILITY
ONE, TWO AND THREE TON CAPACITY



LAUTH-JUERGENS TRUCKS ARE THE LATEST IN CONSTRUCtion, most powerful in operation and the motors are guaranteed against defective workmanship and material for the life of the truck. They are positively the highest class trucks made. Two cylinder, one-ton, four cylinder, one, two and three-ton. Four speeds forward, Hess-Bright ball bearing transmission made in our own shops of the finest tool steel, three-piece disc clutch, covered by patents owned by us. Send for 1912 Catalog and specifications. Prompt delivery on all models. Large publicity campaign just begun. Our quality will do the rest.

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NEW YORK—West Side Garage & Motor Co., 160-162 101st St.
CHICAGO—The Lauth-Juergens Motor Car Co., 2630-32 Wabash Ave.
NEWARK, N. J.—Merchants Motor Car Co., Essex Building.
DETROIT, MICH.—Bierl Auto Truck Sales Agency, 453 Dix Ave.
DISTRICT OF COLUMBIA AND VICINITY—Bowles Motor Sales Co., Inc., 1608 14th St. N. W., Washington, D. C.

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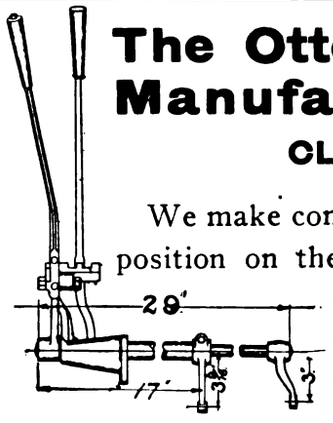
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Fedders Manufacturing Works

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Model "T"

Special arrangement for "get-at-ableness"; also a Special Oiling device—best yet.

All the details to you if you write to

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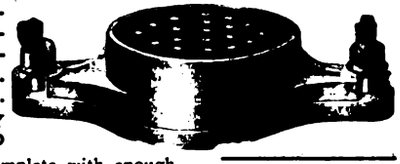
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Repair That Inner Tube Yourself

No electricity, no steam, no trouble, no delay. A little gasoline, a little rubber, the

Imperial Vulcanizer Repair Kit

and a few simple directions, and you have repaired the puncture perfectly in 15 minutes. Time and money saved.



GUARANTEED TO SATISFY OR MONEY REFUNDED

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NICKEL PLATED

Patent Pending

Complete with enough rubber for 40 punctures. Pays for itself in a short time.

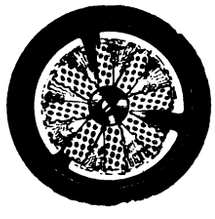
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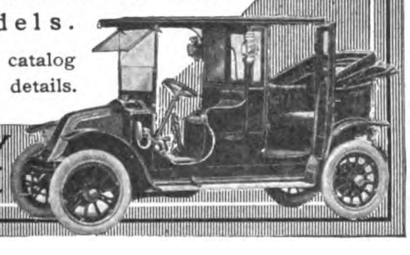
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Croxton cars incorporate all of the features for which the buyer looks in the new models.

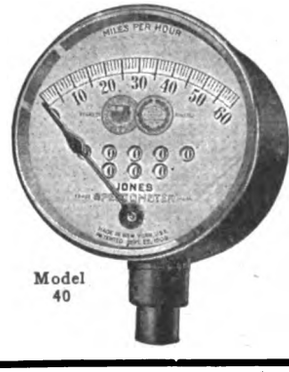
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Model 40

Mechanically geared to the truth. Constructed on the principle of Centrifugal Force.

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INSTANTANEOUS PROTECTION
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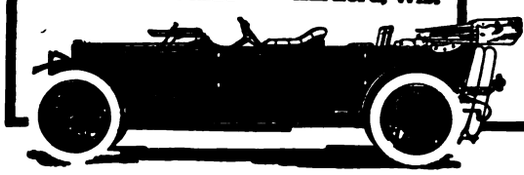
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Every part built in the KisselKar plant, which is equipped with every facility for economical manufacture. All KisselKars have extra liberal wheelbase and roomy tonneaus unsurpassed by any car at any price for comfort and capabilities. Write for catalog.

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169 Kissel Avenue Hartford, Wis.

"Thirty"
"Forty"
"Fifty"
60 H.P. "Six"

KisselKar prices include full equipment—self-starter, top, windshield, demountable rims, speedometer, electric lighting equipment, shock absorbers, etc.



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THE UNIVERSAL CAR

We have had to double our gigantic output—and the demand is more than doubling. Nearly 180,000 have been sold and delivered. New prices $525 to $800. Dealers everywhere. Ford Motor Company, Detroit, Michigan.

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Direct Drive—Single Reduction
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Irreversible Worm Steer
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Buffalo, New York

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Prices are the lowest for which horns of Dependable qualifications can be bought



Torpedo Type
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You Need This Catalog

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INTERLOCK INNER TIRES
Stop Tire Troubles

The one weak point of the automobile is that you cannot depend on the tires. Thousands of motorists have solved their tire problem by discarding inner shoes, reliners, fillers and other makeshifts and equipping their tires with **Interlock Inner Tires.**

Interlocks are complete inner tires (not inner shoes) placed between the outer casing and inner tube to strengthen the casing and protect the tube from punctures. They double the mileage of new tires and add 1,000 to 5,000 miles to old ones—save half your tire expense—and make tires trouble proof.

Dealers and Motorists—Investigate Interlocks

Don't delay—write now for booklets, data, prices, testimonials of users, road tests, etc. Mention size and kind of tires you use.

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Automobile Frames and Special Stampings

THE PARISH & BINGHAM CO.

CLEVELAND, OHIO

M & P ELECTRIC VEHICLES DETROIT

DEALERS—Here is the first electric truck that sells for about $700 less than any other. Capacity 1000 pounds—Service 100 per cent. more than gasoline truck—Economy of production most pronounced. Write.

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M & P Electric Vehicle Co.
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$1,500.00

MARMON

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32-40 h. p., 120-inch wheelbase, dependable electric starting and lighting system, left-hand drive, center control, nickel trimmings, with newest body types to meet every requirement and corresponding equipment—

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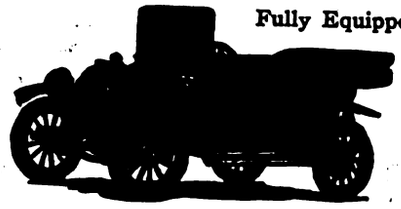
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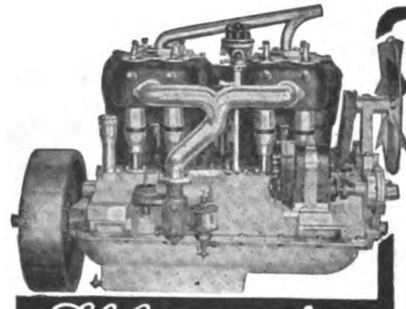
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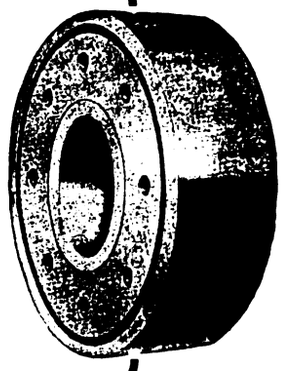
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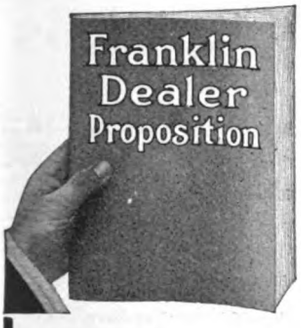


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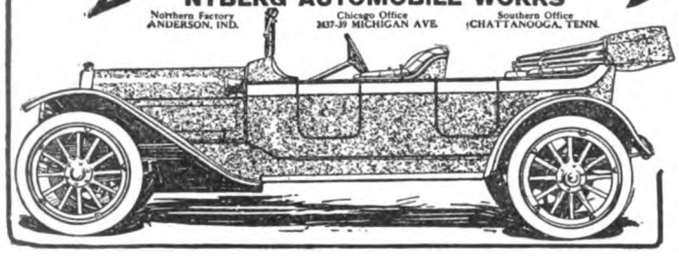
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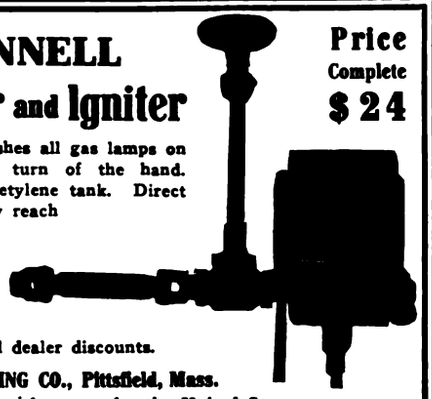
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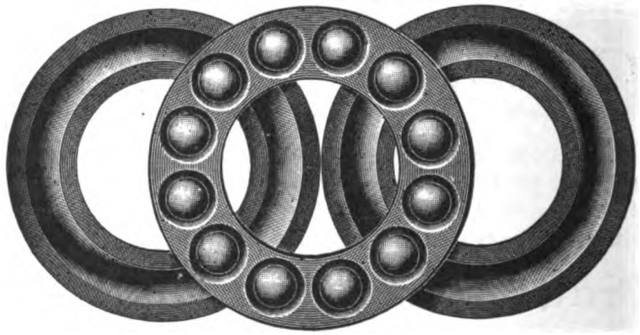
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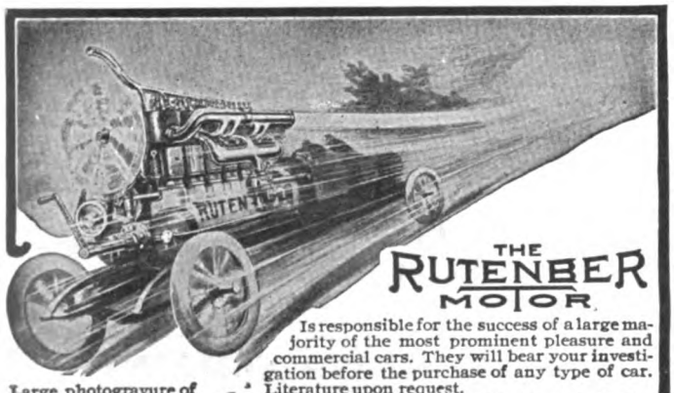
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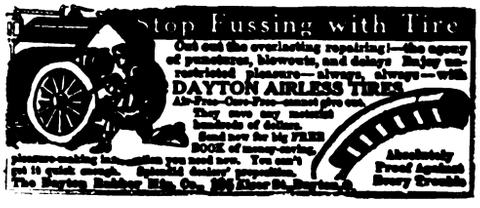
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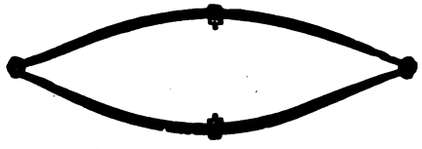
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The Grant-Lees Machine Co.
Cleveland, Ohio

METZ "SPECIAL" $395
Completely equipped, fully guaranteed. 22½ H.P., 4-cylinder water-cooled motor, Bosch magneto. Artillery wheels, best quality 30" x 3" clincher tires. Makes 5 to 50 miles per hour on the high speed, 28 to 32 miles on 1 gal. of gasoline. You can secure EXCLUSIVE SALE in your territory. Send for Book "B."
METZ COMPANY, Waltham, Mass., U. S. A.

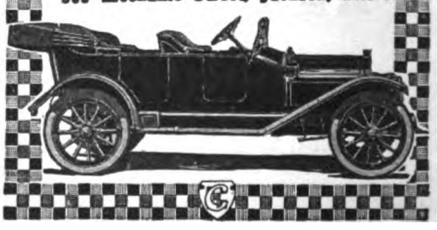
Reo the Fifth
Final and crowning achievement of R. E. Olds, pioneer designer of autos. A standard size 30 to 38 horsepower four cylinder car of modern refinements priced at only $1,095.
(38) R. M. OWEN & CO., General Sales Agents
REO MOTOR CAR CO., Lansing, Mich.



GUARANTEED AUTOMOBILE SPRINGS
Our plant is devoted exclusively to the manufacture of high quality springs. All work is oil tempered and warranted. Our circulars contain valuable information. Write.
PENN SPRING WORKS
BALDWINSVILLE, N. Y.

The Bush Radiator
THE BUSH MANUFACTURING CO.
HARTFORD, CONN.

Cutting
1913 IMPORTANT FEATURES
Self Starter — Electric Lighting
Turkish Cushions — 36-in. x 4-in. Tires
12-in. Upholstering — Increased Wheel Base
Great Ease of Riding — Carbureter Dash Adjustment
Demountable Rims — Nickel Trimmings
Unit Power Plant—three point suspension.
Cutting B-40, 120 in. Wheelbase, 40 h. p. 5-passenger touring car, fully equipped, $1475
Cutting A-40, 120-in wheelbase, 40 h. p. 2-passenger roadster, fully equipped, $1475
Cutting C-55, 132-in. wheelbase, 55 h. p. 5-passenger touring car, fully equipped, $2000
Cutting Automobile Co.
305 Mechanic Street, Jackson, Mich.



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MOTZ Cushion Tires

For Pleasure Cars and Light Delivery Cars

Send for Booklet 58

THE MOTZ TIRE AND RUBBER CO.

Executive Office: Akron, Ohio

BRANCHES:

2003 Michigan Ave., Chicago — 900 Woodward Ave., Detroit
1737 Broadway, New York — 600 E. 18th St., Kansas City
1400 Race St., Philadelphia — 2268 Euclid Ave., Cleveland
1201 W. Pico St., Los Angeles, Cal. — 326 S. Craig St., Pittsburg
Standard Tire & Rubber Company, 1 Dundee St., Boston
Distributors for New England States

A—Shows double, notched treads.
B—Shows undercut sides.
C—Shows slantwise bridges.
D—Shows absorbing means when passing over an obstruction.

GASOLINE TURBINES

Half the size, Half the weight, Half the fuel, Half the friction

Smooth as Electric, Will replace any engine in any car

No Valves, No Springs
No Adjustment, No Noise
No Fly Wheel, No Muffler
No Back Pressure

Booklet Upon Request

There Isn't Much Left

SEMPLE S. SCOTT 1661 Marquette Bldg. CHICAGO, ILL.

Exclusive Territory Open for Live Agencies

Schafer Ball Bearings

Famous for Their Durability

BARTHEL, DALY & MILLER

42 Broadway NEW YORK



NATIONAL Compound Mixer and Primer

makes any car start easier in cold weather; adds 10 to 40% to power and mileage. Simple, easily installed, guaranteed effective on any motor. Get details and price.

NATIONAL MANUFACTURING CO., Kalamazoo, Mich.



Abbott-Detroit

"The demand of the day is that an organization shall be judged by its product and not by what it claims for itself"

Keep this in mind when you examine these 1913 models

MODELS AND PRICES

30-40	Fore-door Roadster, 116-inch wheel base	$1700
34-40	5-passenger, Fore-Door Touring Car 116-inch wheel base	$1700
44-50	5-passenger, Fore-Door Demi-Tonneau 121-inch wheel base	$1975
44-50	7-passenger, Fore-Door Touring Car 121-inch wheel base	$2000
44-50	Battleship Roadster, 121-inch wheel base	$2150
44-50	7-passenger, Fore-Door Limousine 121-inch wheel base	$3050

Advance Catalog on Request

ABBOTT MOTOR CO.

607 WATERLOO STREET DETROIT, MICH.

"Built for Permanence" "Guaranteed for Life"

To Smooth Rough Roads

THE LITTLE STEERSMAN



The one device most needed by the man who wants to make steering a pleasure instead of a labor.

Removes all nervous strain—takes physical strain from steering operation—holds machine steady—prevents accidents in case steering gear breaks or tire bursts.

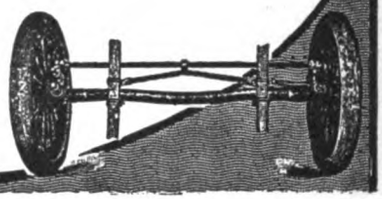
DEALERS, JOBBERS, MANUFACTURERS, this is an article which merits your instant investigation—one which will appeal to every car owner It ought to be, and soon will be a part of the equipment of every car.

Let us tell you more about it. The story is worth knowing.

The Modern Auto Appliance Co.

15 Kinderhook Street

CHATHAM, N. Y.



The circulation of the Motor World is a guaranteed one, sworn to by an affidavit, which will be sent upon request

Weed Chains

The Great Anti-Skid DEVICE

Nine-tenths of all accidents to automobiles are caused by skidding or slipping.

Either you skid into the "other fellow" or the "other fellow" skids into you.

No matter how careful a driver you may be, you cannot prevent skidding or slipping on wet, muddy snow-covered roads or on icy, slippery greasy pavements unless you equip your car with Weed Chains.

Cannot Injure Tires

Because They Creep

An absolute necessity on both rear wheels and if you want to know what real steering steadiness means put them on the front wheels too.

For your own safety—for the safety of the public, fully equip your car with Weed Chains. Make it your business to get a set today.

Recommended and sold by all reputable dealers

Weed Chain Tire Grip Co.

28 Moore St. New York

The Name "Weed" on Every Hook

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order. In capitals, 25 cents per line.

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars, parts and appliances and where help or situations may be secured at a nominal cost.

PARTNER WANTED—Successful owner of two California garages finds that the great growth of his business necessitates the securing of responsible assistance. Is willing to sell interest to active, enthusiastic man of ability, this partner to be either a machinist or competent accountant and buyer. Partner's investment not considered as important as his ability. Unusual opportunity. Address BOX 229, care Motor World.

FORD, Buick, Overland, E-M-F, Maxwell, Reo, Chalmers, Mitchell Air-Friction Carburetters, drive your cars three miles per hour on high. Much more speed; much less gas. Our new model B starts easy in zero weather. Equal portions of gasoline and kerosene works perfectly in weather over 60° F. Satisfaction or refund money. AIR-FRICTION CARBURETER CO., Dayton, Ohio.

DRAGON REPAIR PARTS.
We manufacture and keep on hand all repair parts for the Dragon cars. We make a specialty of repairing this machine. PHILADELPHIA MACHINE WORKS, 67 Laurel St., Philadelphia, Pa.

TWO expert mechanics will call and give estimate to overhaul or adjust car in your own garage. Address E. BETZ, 2531 Belmont Ave., Bronx.

7-PASSENGER Franklin, 6 cylinders. Cost $4,250. Splendid condition, $1,000. BOND MOTOR CO., 1615 Grand, Kansas City, Mo.

I AM always in the market for pneumatic tires of all kinds regardless of quantity. If you have a price that is interesting write me. J. G. WHINHAM, Buffalo, N. Y.

FOR SALE—One 1911 Cadillac, just overhauled; newly painted, new top, fully equipped; as good as new, at a low figure. ED. MILLER, 705 Ann St., Columbus, O.

NEW YORK Automobile Registrations, mailed daily, $1.75 per month. List 1912 to date, $10.00. OWNERS AUTO LIST COMPANY, Albany, N. Y.

AN OPPORTUNITY to get a handsome fur lined overcoat at about one-third price. Black broadcloth outside, lined throughout with finest Australian mink. Large persian lamb collar, all sizes, would retail for $75, while they last, $35. Coats used as samples, but never worn. Sent on approval. Examine before paying. Write today, stating size, remit only express charges. E. ROBERTS, Room 8, 160 West 119th St., New York.

BROKEN CRANKSHAFTS, cylinders, crankcases, flywheels, gear teeth, pistons, perfectly welded and machined ready to replace. Guaranteed and references. Machinery up to 5 tons welded. ATLAS WELDING WORKS, 74-76-78 Irving St., Rahway, N. J.

N. E. AUTO LIST AND TOURIST.
Includes weekly list of all N. E. Auto Owners, Garages, Dealers, etc., with maps and selected N. E. routes, $10.00 yearly. 138 Pearl St., Boston.

A 1912 7-passenger touring car for sale. Cost $3,500; will sell for $700. Genuine bargain. Also a 1911, 5-passenger car; cost $2,500, will sell for $350. 3425 North Broad St., Philadelphia, Pa.

FOR SALE OR EXCHANGE—Several good used motorcycles. WOLKE CYCLE COMPANY, Louisville, Ky.

PEERLESS LEATHER TOP DRESSING
An oil preparation that softens the leather and pantasote. Makes old tops look like new. Ask your garage and supply dealer for it.
The Columbus Varnish Co., Columbus, O.

FORD SPARE WHEEL — Saves tire worry. Doctors use it. Easy to install. Write ANGIER'S, Streator, Ill.

SCORED CYLINDERS repaired, $12. No enlargement of bore—no need for new pistons and rings. Send piston with cylinder. Absolutely reliable method. References, testimonials, and full details on request. WATERBURY WELDING CO., Waterbury, Conn.

GARAGE to let or for sale. On Broadway, Lawrence, Mass. Main thoroughfare Boston to Rockingham Park. New street, block paved. Two-story building, elevator. Two pits. Tank. Rent, $150 month. Call on or address A. H. CUTTER, 333 Broadway, Lawrence, Mass.

PEERLESS EXTRA FINE BLACK BAKING JAPAN.
Bakes either to a high gloss finish, eggshell gloss or dull finish on lamps, radiators and fenders. Will not crack, chip or peel. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

NEW YORK Automobile Registrations, mailed daily, $1.75 per month. List, 1913 to date, $10.00. OWNERS AUTO LIST COMPANY, Albany, N. Y.

WANTED—General manager automobile branch house desires to make change. Can show record of eight successful and profitable years with house I am now with. BOX 228, care Motor World.



An ad. like this will cost you $1.65 for each insertion.

These columns offer you an opportunity to appeal to an audience of 8,000 readers whose merchandising taste is being cultivated

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For Sale—Wants—Exchange

15 cents per line of six words, cash with order. — In capitals, 25 cents per line —

A market place where Dealers, Jobbers and Manufacturers may buy, sell or trade used cars parts and appliances and where help or situations may be secured at a nominal cost.

CHAUFFEUR'S COMPLETE OUTFIT SACRIFICED—Consisting of elegant marmot mink fur lined coat, Persian lamb collar, $35; pair of elegant cub bear robes, $15 each; raccoon cap, $5; pair of fur gloves, $4; pair of goggles, 50c.; 1 pair leather leggins, $3.50. Will sell separately or the lot, all new, never worn, original price, $225. C. CHASE, 118 East 28th St., New York.

DO you wish to better your position? If your character and ability will stand investigation we can place you in any occupation, anywhere. Enclose 50c. for registration with references. Fee returned if unsuccessful. Address DEPT. F, BLUE LIST EMPLOYMENT EXCH., 250 West 87th St., New York City.

VICTORIA TOPS.
That's our specialty, but we make a full line as well. Any style and every one the best that high-grade materials and experienced workmen can make. Prompt service assured. We're glad to estimate special work or quote you prices on stock tops. CENTRAL AUTO TOP CO., Indianapolis, Ind.

AUTOMOBILE CYLINDERS reground. new pistons and rings fitted. Garage air compressors. CAST IRON BRAZING CO., Manchester, N. H.

PEERLESS AUTO TOP DRESSING.
A waterproof dressing for leaking mohair and duck tops and curtains. Makes old and faded tops look like new. Ask your garage and supply dealer for it.
The Columbus Varnish Co., Columbus, O.

FOR SALE—Two worm drive rear axles, designed to carry 5,000 lbs. load—made by Morse-Williams Division of Otis Elevator Co., Philadelphia, Pa. Have never been in service. Make us an offer for them. SHELDON AXLE CO., Wilkes-Barre, Pa.

MAILING LISTS—Automobile owners, dealers, garages, repair shops, commercial car owners, or any make of car. OWNERS AUTO LIST CO., Albany, N. Y.

PEERLESS EXTRA FINE BLACK JAPAN.
Covers solid one coat for enameling lamps, radiators and fenders. No undercoat required. Heat does not affect it. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

ARE YOU in need of any additional help in any department of your business? Are you out of employment or looking for a better connection? Have you second-hand apparatus of any kind or do you want to buy second-hand material. Have you a factory site for sale or do you want to buy one? If so, use the Want and For Sale column of the Motor World. Seven words to the line, fifteen cents a line. Advertisements can be inserted over a number when it is desired and identity of the advertiser will be kept confidential.

PEERLESS BACK AND CUSHION DRESSING.
Softens the leather and will not crack, wash or rub off. Makes old leather look like new. Dries in twenty minutes. Ask your garage or supply dealer.
The Columbus Varnish Co., Columbus, O.

GARAGE WITH MACHINE SHOP and living apartments, all through complete equipped and up to date, for rent or for sale, in fast growing town, on main street, on Long Island, 30 miles from New York. Owner going out of the business. Price reasonable. KAPPERTZ, Farmingdale, L. I. Tel. 21 J.

SALESMEN, one who is now visiting automobile trade or owners. Good money made on a very attractive proposition. STURDY MFG. CO., 2637 Michigan Ave., Chicago, Ill.

WANTED—A first-class man to take the agency for the latest invention on the market, a rubber cover for automobile handles called Steerease; write for full particulars. Address DEPARTMENT E, GOODYEAR RUBBER HOSE AND PACKING CO., 221 Chestnut St., Philadelphia, Pa.

PEERLESS LINING DYE.
Dyes the cloth linings of tops and curtains a black, uniform color, covering up water stains and grease spots. Does not wash off. Ask your garage and supply dealer.
The Columbus Varnish Co., Columbus, O.

LOZIER Type H 4-cylinder touring car. Absolutely new. Demountables. Regular guarantee and equipment. Cost, $5,000. Make cash offer. 1012 N. Grand Ave., St. Louis, Mo.

AUTO LISTS, owners, etc., of any State. S. H. CARROLL, JR., Albany, N. Y.

COLE, Model DD 1912, seven-passenger, fully equipped, top, windshield, speedometer, two extra casings, inner tubes, electric lights, etc. Car has run less than 6,000 miles; good as new. Special reason for selling. Price, $1,100, F. O. B. Indianapolis. Guaranteed as represented. P. O. BOX 596, Indianapolis, Ind.

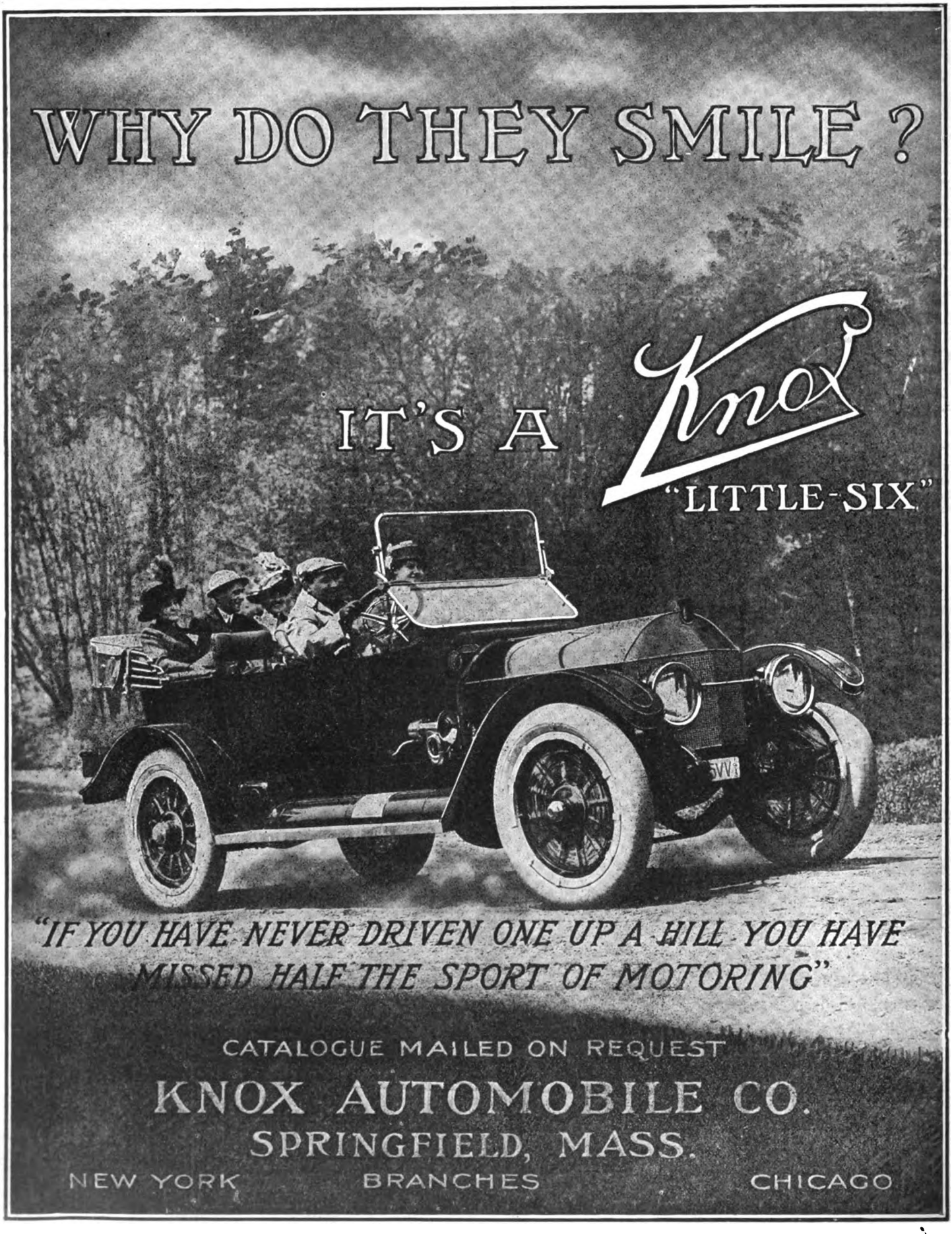
THOMAS 60 H.P. motor with clutch, transmission, Bosch high tension magneto. Stromberg carburetor, for sale cheap. Act quick. Big bargain. KAPPERTZ, Farmingdale, L. I. Tel. 21 J.

weekly to the highest degree by our articles on "Wide Awake Merchandising." Look at the cost as shown in the margins.



An ad. like this will cost you 75c. for each insertion.

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OCT 3 '12

THE MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXIII
No. 2

New York, October 3, 1912

Ten cents a copy
Two dollars a year

"Making the Good Car Better"

Any Automobile Equipped With

GRAY & DAVIS

Electric Lamps — Lighting Dynamo — Electric Starter

Must of necessity be a good car. FIRST—because these highly efficient products add to convenience, comfort, safety. SECOND—because the manufacturer who selects GRAY & DAVIS Equipment is buying the best the market affords regardless of price.

You will find either GRAY & DAVIS Electric Lamps, Lighting Dynamo, Electric Starter or all three in combination on the good cars. The very fact that an automobile has even one of these Quality products is evidence that the car builder is determined to give the purchaser up-to-date equipment.

1913 Peerless Cars Carry Full GRAY & DAVIS Equipment.

Write for Complete Information

GRAY & DAVIS, 55 Lansdowne St., Boston, Mass.

Manufacturers of Automobile Lamps, Dynamos and Electric Starters

Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York

A Chain of Leading Cars Regularly Equipped with the

Truffault-Hartford SHOCK ABSORBER

Do YOU know the sales value of this Equipment on the car YOU sell?

Truffault-Hartford Shock Absorber equipment meets an insistent demand on the part of the car owner. Otherwise the automobile manufacturers would not see fit to employ it as standard factory equipment.

The car that carries this equipment is an easier car to sell. Car buyers know and appreciate what a marked difference it makes in the riding qualities of a car. They know, too, what a large saving on tires and engine repairs is effected by its use.

In view of these facts, is it any more than a logical demand that YOU, too, should insist on this essential equipment from the manufacturer whose car you sell?

Truffault-Hartford Shock Absorbers are considered by car buyers generally to be as much a part of the car's factory equipment as the lamps, the wind shield, the top, etc. And in point of benefit derived they are far more essential.

We are always ready to co-operate with the interested dealer.

HARTFORD SUSPENSION COMPANY

EDW. V. HARTFORD, President

Factory, 164 Bay St. **Jersey City, N. J.**

BRANCHES

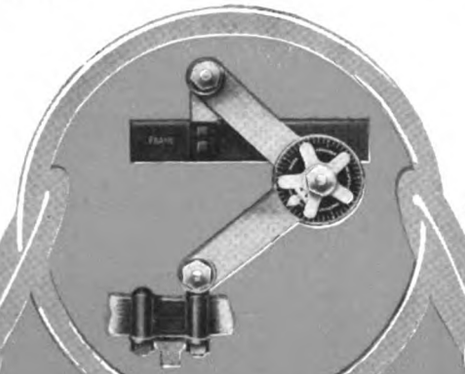
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1458 Michigan Avenue

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THE MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXIII
No. 3

New York, October 10, 1912

Ten cents a copy
Two dollars a year

The PIERCE-ARROW Car

The man who looks at a PIERCE-ARROW envies the owner for the striking individuality of the car's design. The man who rides in a PIERCE-ARROW envies the owner for the car's absolute reliability under all conditions of service. The man who owns a PIERCE-ARROW envies no one.

The Pierce-Arrow Motor Car Co., Buffalo

Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York

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Mr. Car Agent—YOU add to your Sales Arguments—

—when the car YOU sell has Truffault-Hartford Shock Absorbers as part of its equipment.

Buyers know what this equipment does for a car. Years of persistent advertising has taught them. They know how this device saves the engine and tires—how it prolongs the life of the car—what it accomplishes in cutting down up-keep expense. And knowing these things they expect the car they buy to include this equipment.

It is so much to the dealer's advantage to have the car he handles Truffault-Hartford-equipped that there are now 27 leading automobile manufacturers installing Truffault-Hartfords as part of their regular equipment.

Insist on this equipment from the manufacturer you represent. It furnishes you additional sales-arguments. It is an aid to bigger car sales—it is an acknowledged necessity for comfortable, safe and economical motoring.

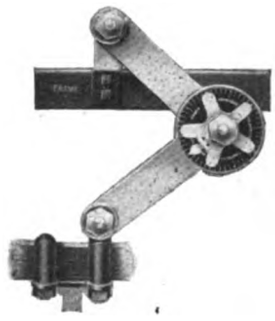
Hartford Suspension Company

EDW. V. HARTFORD, President

Factory, 164 Bay Street, Jersey City, N. J.

BRANCHES :

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Truffault-Hartford SHOCK ABSORBER

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THE MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXIII
No. 4

New York, October 17, 1912

Ten cents a copy
Two dollars a year

The Accuracy and Quality of the Jones Speedometer

A PROVEN FACT—NOT THEORY

Winning the Gold Medal — The JONES won the highest award for **accuracy**—the Royal Automobile Club's Gold Medal. The nearest American competitor finished in 7th place.

U. S. Bureau of Standards — The tests conducted by the U. S. Government resulted in showing the unerring **accuracy** of the JONES.

Leading Universities — In the comparative signed statements of tests made by leading American Universities, the JONES unquestionably proved its **accuracy.**

Adoption by the Police — The fact that the Police Departments in all large cities not only use the JONES, but highly endorse it, is, we believe, conclusive evidence of **accuracy.**

Centrifugal Force — Is the principle of the JONES—impervious to heat, electrical influence or temperature changes—as unalterable as the law of gravitation—hence, the JONES **must** be **accurate.**

Army & Navy Journal Says: "Magnetic speedometers, used by automobiles to register speed, are so inaccurate as to make them practically useless, is demonstrated by an investigation just completed by the Bureau of Standards." Therefore, unquestionable **accuracy** is to be had in the JONES—the Centrifugal instrument.



Model 40

The JONES is the Pioneer—the inspiration of the Speedometer industry. It is Geared-To-The-Truth, gives efficient, reliable service.

Equip With the JONES and Know Your Speed

THE JONES SPEEDOMETER, Factory, New Rochelle, N. Y.

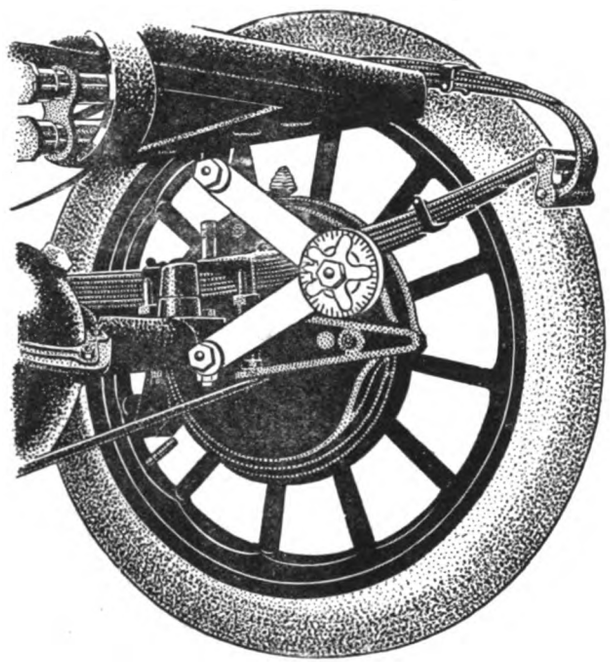
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SAN FRANCISCO: 530 Golden Gate Ave.
BUFFALO: 20 Goodrich St.
LOS ANGELES: 1229 S. Olive St.
PORTLAND: 329 Ankeny St.
SEATTLE: 917 East Pike St.
DETROIT: 253-255 Jefferson Ave.

Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York

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Your Car can't be fully equipped without the

Truffault-Hartford SHOCK ABSORBER



THAT'S the unanimous expert opinion of the greatest car builders of America and Europe. And they express their opinion in the strongest possible terms by equipping with Truffault-Hartford Shock Absorbers these internationally-famous cars:—

Packard	Thomas	Corbitt
Alco	Benz	McFarland Six
Marmon	Fiat Six	Columbia
Stevens-Duryea	Hudson Six	Metallurgique
Simplex	Premier	Brush
Mercer	Stoddard-Dayton	American 50
Oldsmobile	Chadwick	

THE opinion of these builders reflects the demands of motoring thousands—who want the greatest possible comfort from their cars.

These motorists have learned—by their own and the experiences of others—that a car MUST BE TRUFFAULT-HARTFORD-equipped to give the utmost in easy-riding comfort—to eliminate shocks and strains of engine and mechanism—to insure the very lowest wear and tear on tires.

While there are many devices which may save you exertion once or twice each trip—or annoyance once in a thousand miles or so—TRUFFAULT-HARTFORD SHOCK ABSORBERS are giving their service on your car all the time, saving you from thousands of jolts and jars, saving you from hours of uncomfortable riding, and saving you hundreds of dollars in repair and tire bills.

You may appreciate other accessories **occasionally** but you NEED Truffault-Hartfords all the time—they make every road a boulevard.

Four Sizes, $15 to $60 *Write four our "Good Roads" Booklet*

HARTFORD SUSPENSION COMPANY

EDW. V. HARTFORD President Main Office and Factory, 164 Bay Street, Jersey City, N. J.

BRANCHES

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JERSEY CITY.....141-143 Morgan St.
BOSTON.....319-325 Columbus Ave.
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KANSAS CITY.....1524 Grand Ave.
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THE MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXIII
No. 5

New York, October 24, 1912

Ten cents a copy
Two dollars a year

DISCO DISCO DISCO DISCO DISCO DISCO

It's DISCO Everywhere

On good cars at all prices you find the Disco Starter this year.

The manufacturer who looks ahead—the dealer who is progressive—the owner who wants the best—they all must have the

"DISCO"

REG. U.S. PAT. OFFICE

Here are some straws to show which way the wind blows. You'll find the DISCO on the following cars for 1913:

PACKARD	AMERICAN	BUICK	JACKSON
LOCOMOBILE	MARION	SELDEN	PILOT
PIERCE-ARROW	HENDERSON	DAVIS	McLAUGHLIN
STEVENS-DURYEA	SIMPLEX	REPUBLIC	HAVERS

The New Model 16 Disco Better Than Ever

Although nearly 100,000 of our first model DISCO are in use today, and giving satisfaction, it was our own engineers who found some room for improvement. The price is lower—the efficiency higher. It sells for $30 for a 4-cylinder motor, $35 for a 6.

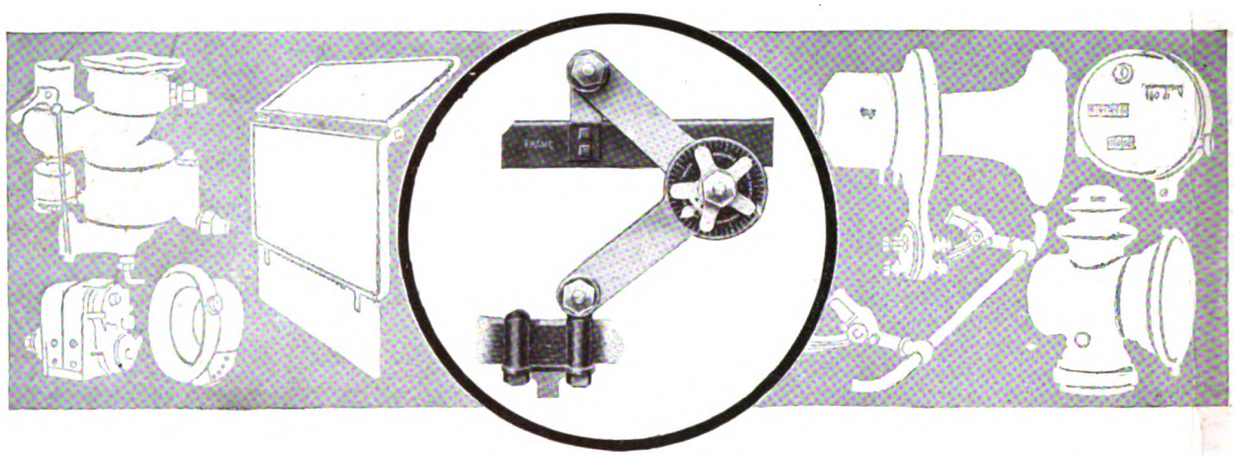
Get our little booklets on the Disco Starter and Disco Lighter.

IGNITION STARTER CO., 715 Dodge Bldg., Detroit, Mich.

COLD WEATHER TIP. Agents and Dealers will make big money this winter on the Disco, the ideal cold weather starter. Works at 20 below zero as well as at 105 in the shade. Write for terms.

Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York

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Accessories Sell The Cars

Car values today are so relatively equal that **equipment** is the biggest factor in closing most sales.

Glance over this year's car advertising. Note well the prominent featuring of accessory equipment. Next year, equipment will play even a larger part in every car dealer's profits, and as usual you'll find the

Truffault-Hartford
SHOCK ABSORBER

The Most Widely Demanded Accessory on Any Car

In fact—Its popularity and usefulness have taken it out of the **accessory** class and make it a **necessity** to motoring comfort.

Leading motor car builders of America and Europe have decided that no car can be **fully equipped without Truffault-Hartfords.** So now you find **TRUFFAULT-HARTFORD SHOCK ABSORBERS** as regular equipment on these internationally-prominent cars:

PACKARD	SIMPLEX	BENZ	STODDARD-DAYTON	COLUMBIA
ALCO	MERCER	FIAT SIX	CHADWICK	METALLURGIQUE
MARMON	OLDSMOBILE	HUDSON SIX	CORBITT	BRUSH
STEVENS-DURYEA	THOMAS	PREMIER	McFARLAN SIX	AMERICAN 50

A man **buys** a car for **comfort**—or he **doesn't** buy on account of **big upkeep cost.** You can actually show every prospect how TRUFFAULT-HARTFORD SHOCK ABSORBERS on YOUR cars give him the **utmost in car comfort** with the **minimum** of **upkeep expense.**

If your builder uses Truffault-Hartfords as standard equipment—he has your "easy sales" interests at heart. If he doesn't—then write us today for further details—and then write him for Truffault-Hartford "sales makers" on your allotment of cars.

FOUR SIZES **ANY CAR** **EVERY ROAD**

THE HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, President
164 Bay St., Jersey City, N. J.

BRANCHES:

NEW YORK—1700 Broadway
NEW YORK—212-214 West 88th St.
JERSEY CITY—141-143 Morgan St.
BOSTON—319-325 Columbus Ave.
CHICAGO—1458 Michigan Ave.
DETROIT—803 Woodward Ave.
INDIANAPOLIS—448-450 N. Capitol Blvd.
KANSAS CITY—1524 Grand Ave.
NEWARK—289 Halsey St.
PHILADELPHIA—1437 Vine St.

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NOV 2 12

THE MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXIII
No. 6

New York, October 31, 1912

Ten cents a cop
Two dollars a yea

Automobile History Repeats Itself

In 1912 the car without electric lights is a back number car. Four years ago GRAY & DAVIS introduced the **first** practicable electric lighting system.

The remarkable efficiency of the GRAY & DAVIS Dynamo led to the almost universal adoption of electric lights.

Today, the Electric Starter is **the thing.** The good cars are equipped with Electric Starters.

The unusual power, positive operation and economy of the GRAY & DAVIS 6 volt Electric Starter has led to its adoption by—

The Leading Car Builders of America

GRAY & DAVIS products not only represent the big improvements in automobile equipment, but they are pre-eminently the best. With the Starter, as with the Dynamo—**"History Repeats Itself."**

Write for Information

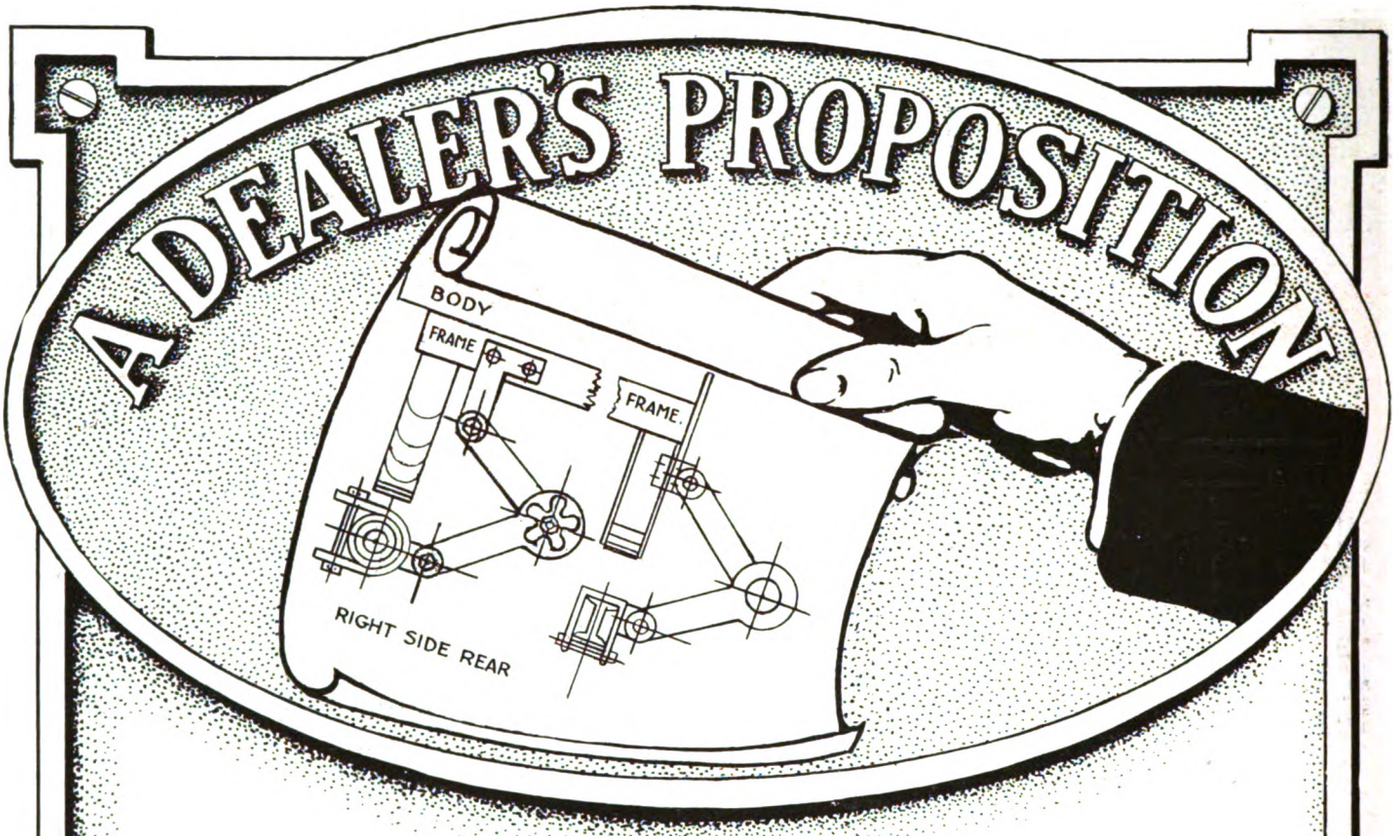
GRAY & DAVIS, Inc.

55 Lansdowne Street BOSTON, MASS.

Manufacturers of Automobile Lamps, Dynamos and Electric Starters.

Published Weekly by The Motor World Publishing Company, 1600 Broadway, New Yor

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Truffault-Hartford
SHOCK ABSORBER

is distinctively a dealer's proposition. We've spent a fortune in compiling blue prints of every make, year, model of automobile manufactured since the motor car industry began. These prints show how to Truffault-Hartford-equip with a minimum of trouble and expense. The printed instructions, also provided, further simplify attachment.

Any dealer, anywhere, can sell Truffault-Hartford Shock Absorbers and put them on a car, if the purchaser does not want to do it himself.

Every car owner is a live, prospective buyer, for there is a model for every car from modest roadster to pretentious limousine and they list from

$15 to $60 a Set of Four

No accessory better or more widely advertised. Favorably known wherever autos "chug." Giving absolute satisfaction on more than 200,000 cars. Indispensable for comfortable motoring. A reducer of upkeep cost.

A dealer's proposition, pure and simple.

Write for full particulars with details of our co-operative dealers' advertising.

HARTFORD SUSPENSION COMPANY

EDW. V. HARTFORD, President **Main Offices and Factory, 164 Bay St., Jersey City, N. J.**

BRANCHES

NEW YORK.....1700 Broadway
NEW YORK.212-214 West 88th St.
JERSEY CITY.141-143 Morgan St.
BOSTON...319-325 Columbus Ave.
CHICAGO....1458 Michigan Ave.
DETROIT....803 Woodward Ave.
KANSAS CITY...1524 Grand Ave.
NEWARK.....289 Halsey St.
PHILADELPHIA...1437 Vine St.
INDIANAPOLIS, IND., 448-450 North Capitol Blvd.

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THE MOTOR WORLD

A Trade Paper Giving the World's Motor News

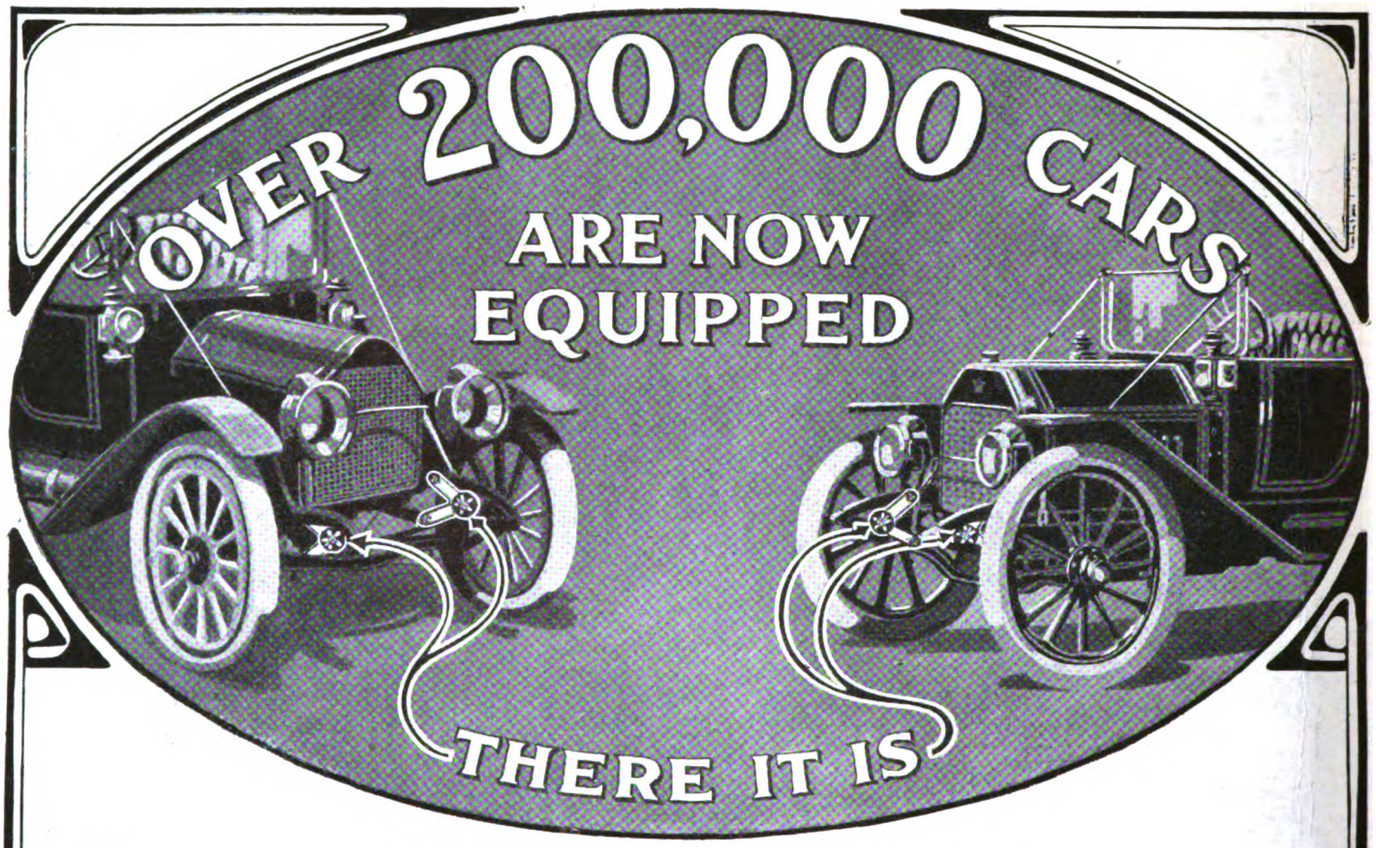
Vol. XXXIII
No. 7

New York, November 7, 1912

Ten cents a copy
Two dollars a year



Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York



The

Truffault-Hartford
SHOCK ABSORBER

is giving *solid comfort* to 200,000 car owners.

This comfort is more than the *physical comfort* which an easy-riding car imparts; it's a *mental comfort* as well, for it is cheering to the mind to know that tires are being saved from excessive wear and tear, springs from breakage, car from rapid deterioration—and these are the very results that attend the use of the Truffault-Hartford.

Scientific spring control accomplishes these wonders and the Truffault-Hartford is the only shock absorber that exercises such control. This it does through *frictional absorption, a proved and patented principle.* Every jolt and jar is neutralized; spring and absorber working in perfect harmony, assimilate both so effectively that real auto comfort is realized and *"Every Road's a Boulevard."*

Your factory can take care of you. If you insist, your car will come from it, Truffault-Hartford-equipped. If it doesn't, we have a blueprint which facilitates equipment in your own or dealer's garage.

A note or postal with mention of make, year and model will bring you full particulars.

HARTFORD SUSPENSION COMPANY

EDW. V. HARTFORD, President — **Main Offices and Factory, 164 Bay Street, Jersey City, N. J.**

BRANCHES:

NEW YORK.....1700 Broadway
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DETROIT.....803 Woodward Ave.
INDIANAPOLIS, IND..448-450 North Capitol Blvd.
KANSAS CITY.....1524 Grand Ave.
NEWARK.....289 Halsey St.
PHILADELPHIA.....1437 Vine St.

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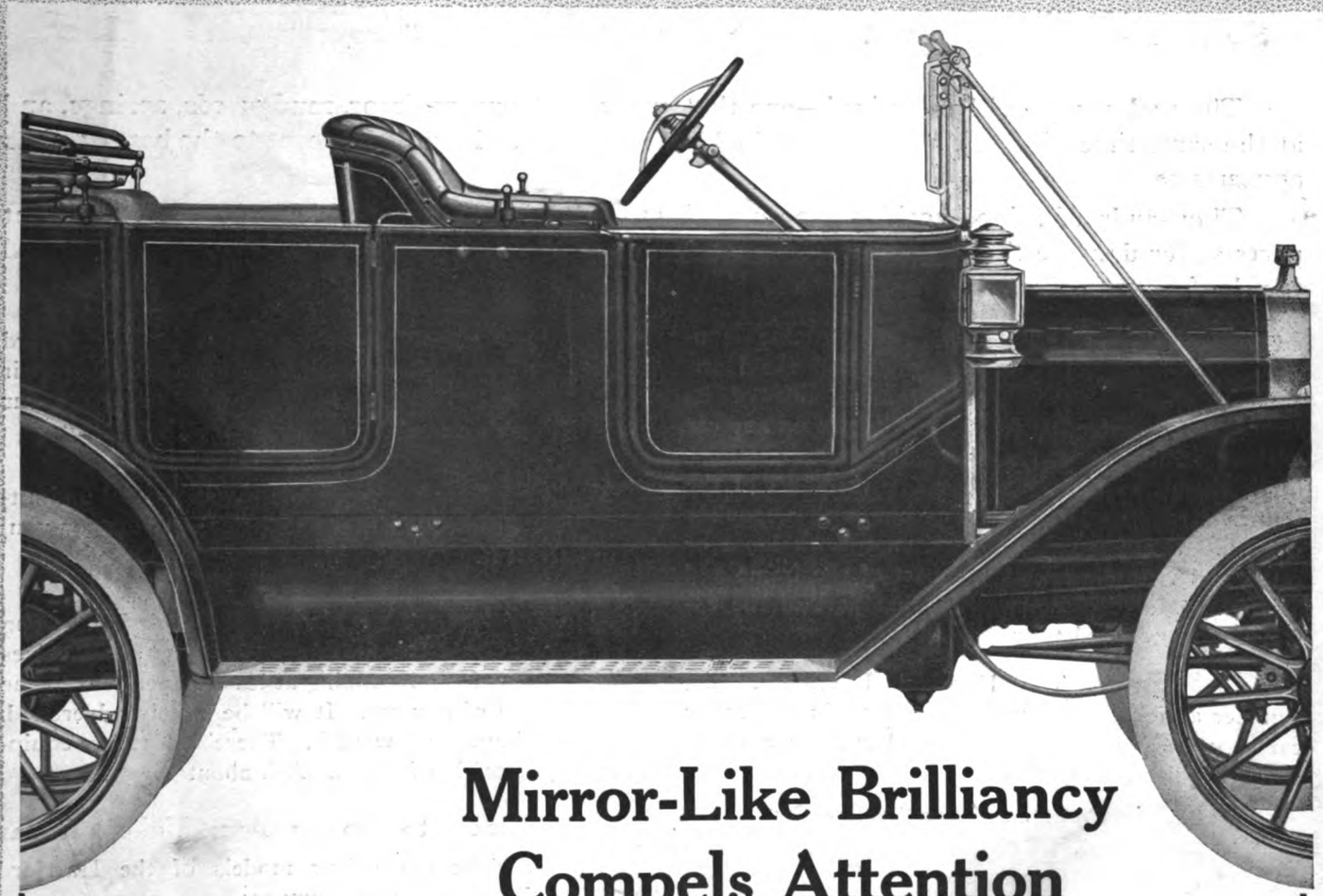
THE MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXIII
No. 8

New York, November 14, 1912

Ten cents a copy
Two dollars a year



Mirror-Like Brilliancy Compels Attention

BEAUTY of finish is an important selling help. It is the external evidence of quality—the "first impression" that starts the sale right.

Cars finished with Berry Brothers' Automobile Varnishes and Baking Japans have that deep, rich, mirror-like brilliancy that compels attention, and makes the finish a real, vital selling help.

Any car, of any type, at any price, can have this selling help by the right use of our special finishes.

BERRY BROTHERS' VARNISHES

BERRY BROTHERS, Limited

Largest Manufacturers of Varnishes, Shellacs, Air Drying and Baking Japans, Lacquers, Stains, Fillers and Dryers.

FACTORIES—Detroit, Mich., and Walkerville, Ont.

BRANCHES—New York, Boston, Philadelphia, Baltimore, Chicago, Cincinnati, St. Louis, San Francisco.

Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York

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ANNOUNCEMENT EXTRAORDINARY

Here Is Something Different—Something Better

The Hartford FOUR LEAF FRICTION SPRING Bumper

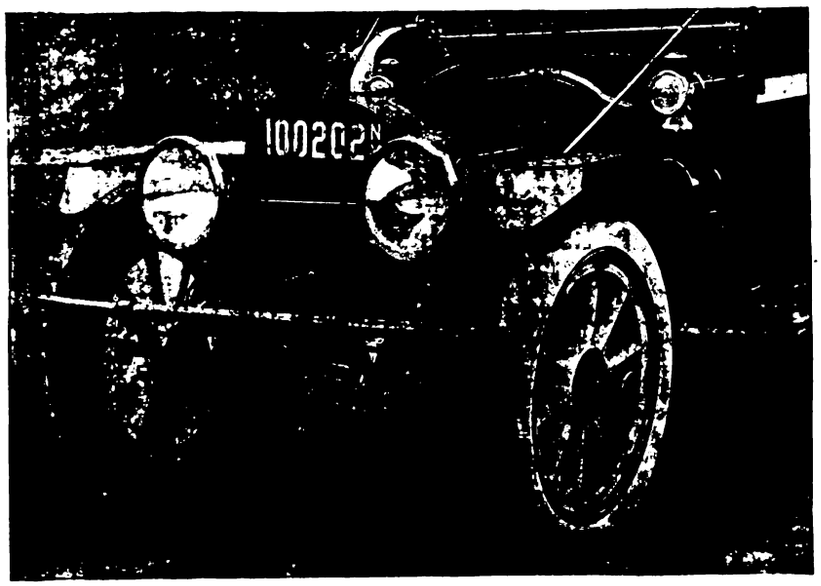
The real car guard has arrived—one that **protects lamps, radiator, mudguards, springs,** and at the same time gives a car "a dressed look" which **adds at least 25 per cent to the beauty of its appearance.**

Thousands of **minor accidents occur daily** to unprotected cars, accidents in which the front parts suffer damage that is costly to repair. They emphasize the necessity of an effective **guard** for the front of a car. This is what the Hartford is.

Attaches to the Car Frame Without Drilling Holes—The extreme simplicity of the Hartford is one of its strongest recommendations. It can be put on any car without drilling any holes or making any alterations, for it clamps to the top of the side members of the frame. Readily attached by any one with a monkey wrench. When once applied, cannot work loose or rattle and virtually becomes a part of the frame and directs the force of collision to that part of the car which is best suited to withstand it.

The Best Ever—The Hartford Friction Spring Bumper anticipates every requirement of an effective car guard. Every car needs it and every car owner will recognize its superiority.

Protects and Beautifies the Car



Car Owners—You can save the price of a Hartford Friction Spring Bumper many times over in repair bills. You can add much to the appearance of **your** car. There's a model for your car. Ask about it.

Dealers—Here is a profitable proposition of **unlimited possibilities.** We've a **special proposition for you.** Ask about it.

Car Builders—The Hartford Friction Spring Bumper affords the finishing touch that emphasizes the beauty of a car—adding at least 25 per cent to the appearance of any car. It will be widely advertised. The car buyer will want it. There's a **factory equipment proposition** for you. Ask about it.

Ready to Go on Any Make of Car

There are four models of the Hartford Friction Spring Bumper:

Large	For cars weighing over 3000 pounds.....	**$20.00**
Medium	For cars weighing from 1500 to 3000 pounds....	**$16.00**
Small	For cars weighing up to 1500 pounds.....	**$12.00**
Special Type for Ford Cars		**$12.00**

To attach any one of these models is simplicity itself.

Hartford Suspension Co.

EDWARD V. HARTFORD, Pres.

164 Bay Street Jersey City, N. J.

BRANCHES:

New York, 1700 Broadway. Jersey City, 141-143 Morgan St.
New York, 212-214 West 88th St. Boston, 319-325 Columbus Ave.
Chicago, 1458 Michigan Ave. Detroit, 803 Woodward Ave.
Kansas City, 1524 Grand Ave. Newark, 289 Halsey St.
Philadelphia, 1437 Vine St.
Indianapolis, 448-450 North Capitol Boulevard.

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THE MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXIII
No. 9

New York, November 21, 1912

Ten cents a copy
Two dollars a year

DISCO DISCO DISCO DISCO DISCO DISCO

It's DISCO Everywhere

On good cars at all prices you find the Disco Starter this year.

The manufacturer who looks ahead—the dealer who is progressive—the owner who wants the best—they all must have the

"DISCO"

REG. U.S. PAT. OFFICE

Here are some straws to show which way the wind blows. You'll find the DISCO on the following cars for 1913:

PACKARD	AMERICAN	BUICK	JACKSON
LOCOMOBILE	MARION	SELDEN	PILOT
PIERCE-ARROW	HENDERSON	DAVIS	McLAUGHLIN
STEVENS-DURYEA	SIMPLEX	REPUBLIC	HAVERS

The New Model 16 Disco Better Than Ever

Although nearly 100,000 of our first model DISCO are in use today, and giving satisfaction, it was our own engineers who found some room for improvement. The price is lower—the efficiency higher. It sells for $30 for a 4-cylinder motor, $35 for a 6.

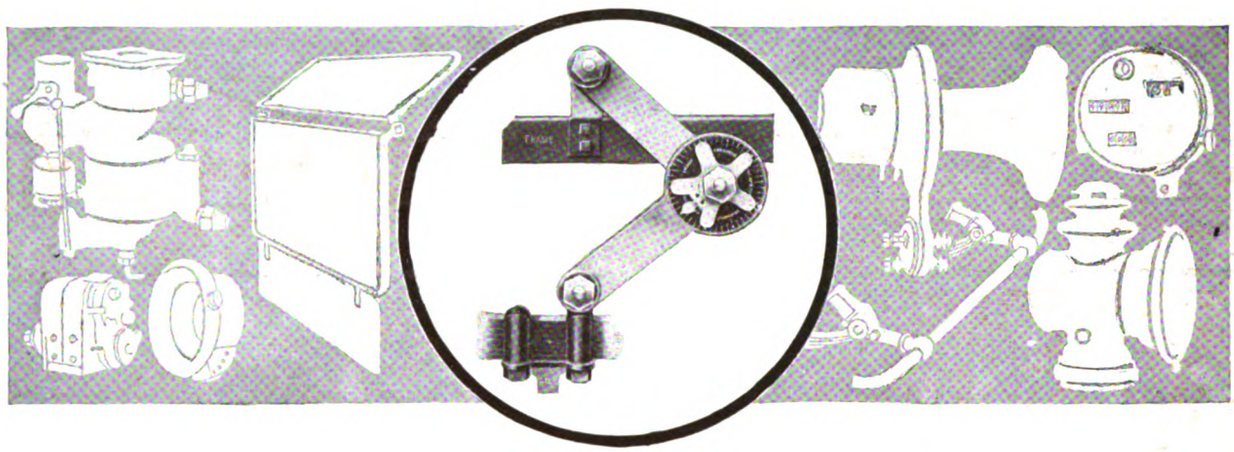
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IGNITION STARTER CO., 715 Dodge Bldg., Detroit, Mich.

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Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York

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Accessories Sell The Cars

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ALCO	MERCER	FIAT SIX	CHADWICK	METALLURGIQUE
MARMON	OLDSMOBILE	HUDSON SIX	CORBITT	BRUSH
STEVENS-DURYEA	THOMAS	PREMIER	McFARLAN SIX	AMERICAN 50
				NYBERG

A man **buys** a car for **comfort**—or he **doesn't** buy on account of **big upkeep cost.** you can actually show every prospect how TRUFFAULT-HARTFORD SHOCK ABSORBERS on YOUR cars give him the **utmost in car comfort** with the **minimum** of **upkeep expense.**

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FOUR SIZES **ANY CAR** **EVERY ROAD**

THE HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, President
164 Bay St., Jersey City, N. J.

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BOSTON—319-325 Columbus Ave.
CHICAGO—1458 Michigan Ave.
DETROIT—803 Woodward Ave.
INDIANAPOLIS—448-450 N. Capitol Blvd.
KANSAS CITY—1524 Grand Ave.
NEWARK—289 Halsey St.
PHILADELPHIA—1437 Vine St.

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THE MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXIII
No. 10

New York, November 28, 1912

Ten cents a copy
Two dollars a year

The Car Without an *Electric Starter*
Is an Incomplete Automobile

Every engineer, every manufacturer and practically every motorist realizes that the **electric starter** is the thing today. Likewise engineers, manufacturers and motorists know that

GRAY & DAVIS
6 Volt Electric Starter

is distinctly better than any other starting device. No other starter has the power, positive operation and efficiency of the GRAY & DAVIS Starter.

IF YOU'RE A MANUFACTURER—Equip with GRAY & DAVIS Starter, it is in demand. America's leading manufacturers use it.

IF YOU'RE A DEALER—Insist that the car you handle be so equipped. Such cars are easy to sell because 'most everyone wants the GRAY & DAVIS Starter.

IF YOU'RE AN OWNER—Don't accept a cheap, inefficient substitute. When you **buy** a car you're entitled to the best. Likewise remember that the **good** cars carry GRAY & DAVIS Starter, Lamps, Lighting Dynamo or all **three** in combination.

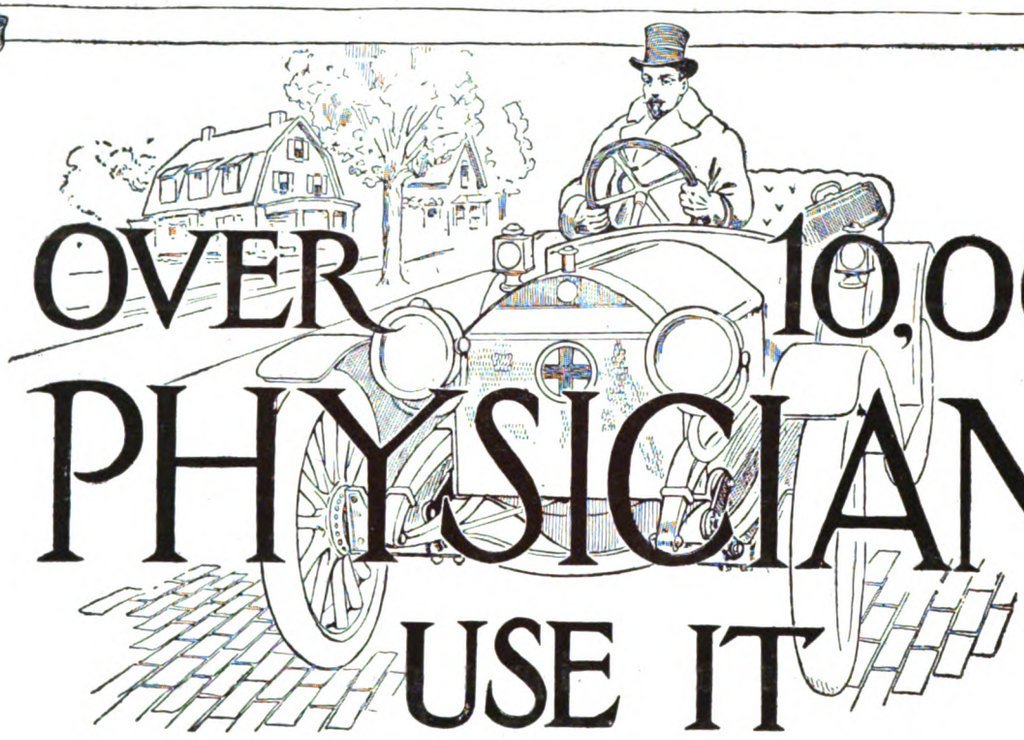
Write for Information

GRAY & DAVIS, Inc., 55 Lansdowne Street, Boston, Mass.

Manufacturers of Automobile Lamps, Dynamos and Electric Starters

Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York

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OVER 10,000 PHYSICIANS USE IT

The *Truffault-Hartford* SHOCK ABSORBER

is used by a very large percentage of the medical men who own and operate motor cars.

A physician's calling brings him everywhere. He must take roads as he finds them. To save time is his chief aim and many a call leads him over rut-cut suburban or country road, often at breakneck speed.

The danger attending such travel has convinced physicians of the need of something that will make their automobiles ***smooth-riding,*** irrespective of road conditions. ***They know that jolting and bouncing are dangerous to the human frame;*** have often been the cause of dislocation or strain and always promote bodily fatigue.

That ten thousand and more physicians have chosen Truffault-Hartford Shock Absorbers as a means of comfort and a protection against bodily injury, is a strong endorsement. Here is an expression of opinion by one of them;

> *"I secured a set of your Truffault-Hartford Shock Absorbers from a friend, also a physician, who purchased them for his car, an E.M.F. '30', five-passenger, but never applied them as he purchased a higher priced car already equipped with them.*
>
> *"After eight months' use of the car without them, over roads so rough as to give any car a severe test, I have applied the Truffault-Hartford Shock Absorbers and it seems that I have secured a new car with nearly double the efficiency of my E.M.F. '30' Roadster. The advantages obtained are truly remarkable. Roads are not rough any more or nearly as much so, and I believe it is almost impossible to break a spring. Prior to applying the Shock Absorbers, I broke three springs and three axles. I get a great deal out of my car both in speed and service over very bad roads here in the interior of the country (eighteen miles from the city) and can fully appreciate the comforts of the Truffault-Hartford Shock Absorbers and feel that you would appreciate my gratification in getting such a necessity to the extent of my writing you this unsolicited letter."—Edw. G. Parke, M.D., Benton, Miss., R.F.D., No. 1.*

Truffault-Hartford Shock Absorbers are included as regular factory equipment on over 25 of the largest and best selling cars.

For greater comfort, greater economy, for speed with safety, the Truffault-Hartford is indispensable. It "Makes Every Road a Boulevard."

HARTFORD SUSPENSION COMPANY

EDW. V. HARTFORD, President **Factory, 164 Bay Street, Jersey City, N. J.**

BRANCHES:

NEW YORK.....1700 Broadway	BOSTON.....310-325 Columbus Ave.	NEWARK.....289 Halsey St.
NEW YORK.....212-214 W. 88th St.	CHICAGO.....1458 Michigan Ave.	INDIANAPOLIS..448-450 N. Capital Blvd.
JERSEY CITY.....141-143 Morgan St.	DETROIT.....803 Woodward Ave.	PHILADELPHIA.....1427 Vine St.
	KANSAS CITY.....1524 Grand Ave.	

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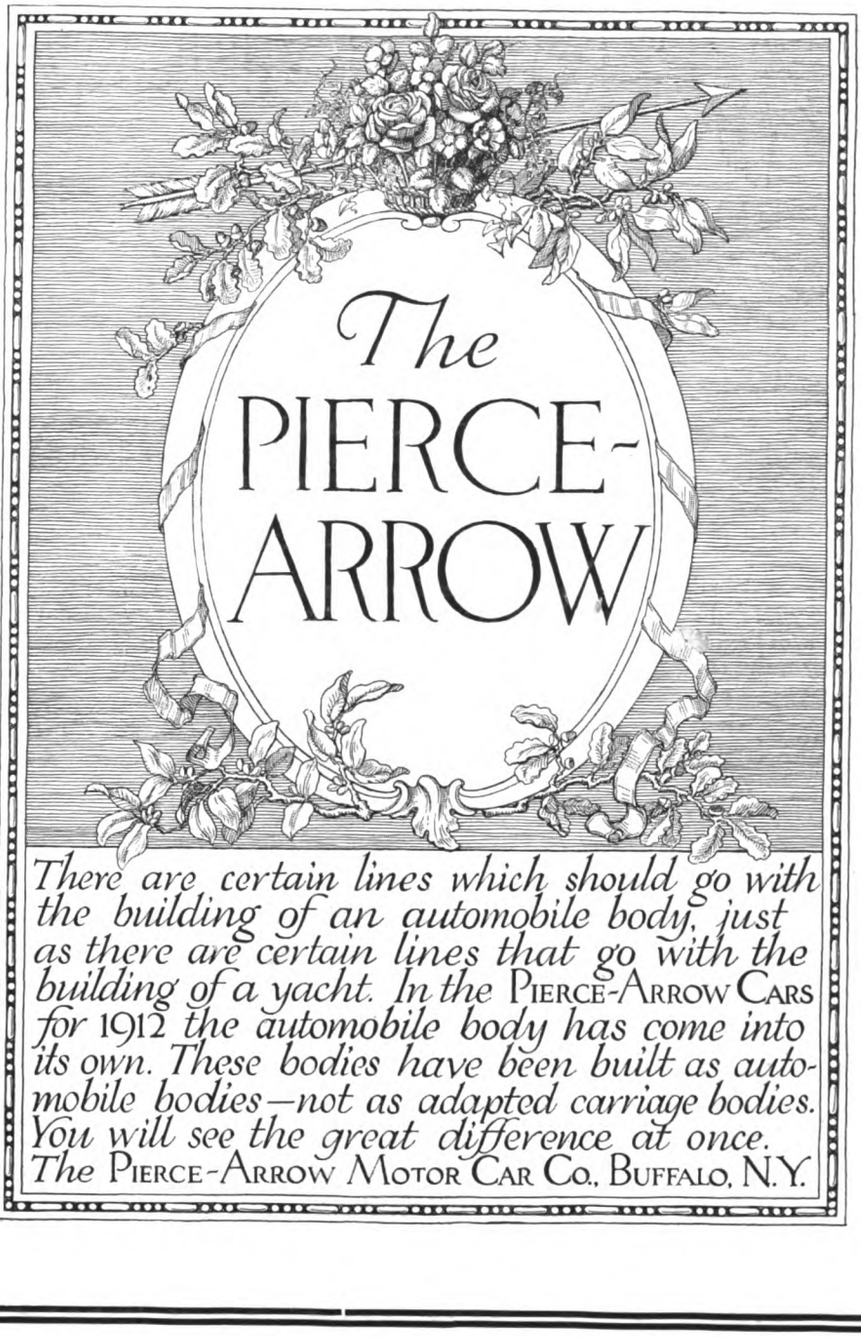
THE MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXIII
No. 11

New York, December 5, 1912

Ten cents a copy
Two dollars a year



Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York



"I INSIST ON COMFORT"

Car Buyer

THE MOST ESSENTIAL FEATURE

There are some accessories which a car absolutely needs, others which are mere incidentals, purchased more for show than usefulness. Ask anyone, who motors to any extent, what he or she deems the most desirable trait in an automobile and, nine times out of ten, the answer forthcoming is

"COMFORT"

And when it comes right down to "case notes," **comfort is everything.** The car which telegraphs the presence of every rut and bump in a roadway to its occupants, "knocks" itself every moment it is out of the garage. The next time its owner buys, the chances are that it will be another make. This very fact has influenced many makers to build comfort into their cars. These are doing it:

Packard	**American 50**	**Stoddard Dayton**	**Mercer**	**Rambler**	**Brush**
Fiat	**Oldsmobile**	**Thomas**	**Metallurgique**	**Velie**	**National**
Alco	**Premier**	**Columbia**	**Nyberg**	**McFarland**	**Pathfinder Speedster**
Benz	**Stevens-Duryea**	**Marmon**	**Hudson Six**	**Corbitt**	

for they put the

Truffault-Hartford SHOCK ABSORBER

on at the factory. The Truffault-Hartford actually "makes every road a boulevard," and with it there's **comfort, less tire wear, less car tear.**

HARTFORD SUSPENSION COMPANY

E. V. HARTFORD, Pres. **Main Offices and Factory, 164 Bay St., Jersey City, N. J.**

BRANCHES

NEW YORK.....1700 B'way	CHICAGO.....1458 Michigan Ave.	NEWARK.....289 Halsey St.
NEW YORK.....212-214 West 88th St.	DETROIT.....803 Woodward Ave.	INDIANAPOLIS..448-50 N. Capitol Blvd.
JERSEY CITY.....141-143 Morgan St.	KANSAS CITY.....1524 Grand Ave.	PHILADELPHIA.....1437 Vine St.
	BOSTON.....319-325 Columbus Ave.	

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THE MOTOR WORLD

A Trade Paper Giving the World's Motor New

Vol. XXXIII
No. 12

New York, December 12, 1912

Ten cents a co
Two dollars a ye

FIRST IMPRESSIONS



THE trade-mark of the varnish determines the finish on the car, and the finish determines the first impressions.

Cars finished with Berry Brothers Automobile Varnishes and Baking Enamels have a permanent deep, rich, mirror-like brilliancy that starts the sale right and keeps the car sold.

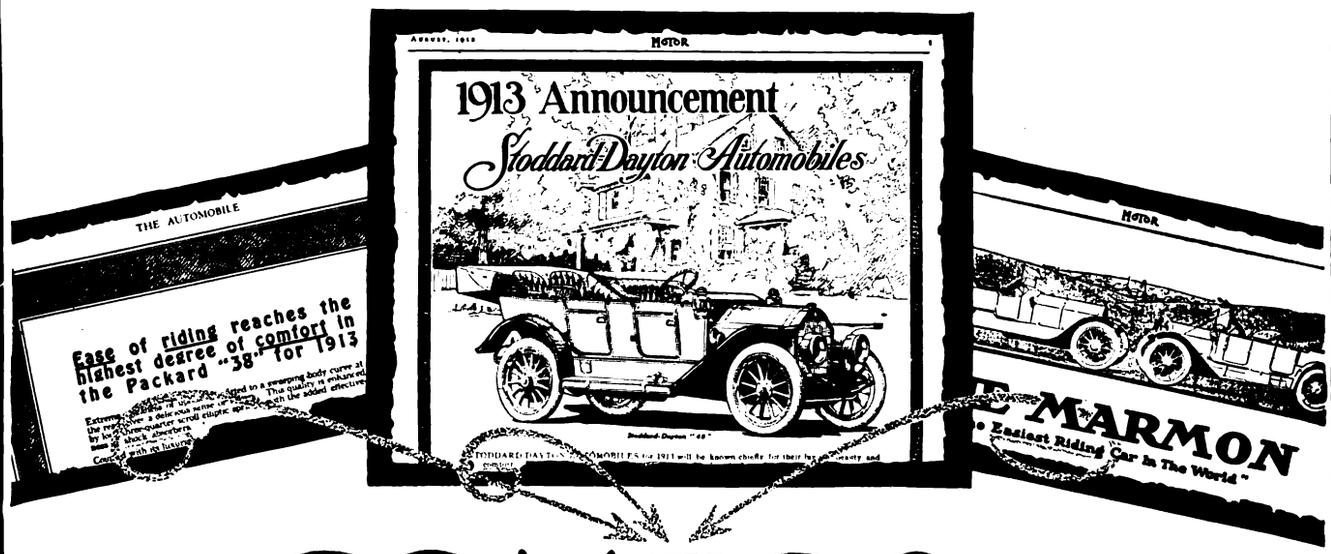
First impressions are lasting impressions when our special finishes are properly used, on any car of any type at any price.

BERRY BROTHERS VARNISHES

BERRY BROTHERS, Limited

Largest Manufacturers of Varnishes, Shellacs, Air Drying and Baking Japans, Lacquers, Stains, Fillers and Dryers.
FACTORIES—Detroit, Mich., and Walkerville, Ont.
BRANCHES—New York, Boston, Philadelphia, Baltimore, Chicago, Cincinnati, St. Louis, San Francisco.

Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York



COMFORT
The Main Thing

The car that rides hard is shunned by the prospective buyer who knows that the *easy-riding* car is not only *comfortable* but *economical* as well. Many builders of famous cars are giving the buyer what he wants by putting on the

Truffault-Hartford
SHOCK ABSORBER

as standard equipment and are able to claim with all honesty that their cars are *comfortable*, that they are *easy-riding*, and, what's more, *they can prove it.* Here they are:

PACKARD	NATIONAL	BENZ	STODDARD-DAYTON	COLUMBIA
ALCO	MERCER	FIAT SIX	CHADWICK	METALLURGIQUE
MARMON	OLDSMOBILE	HUDSON SIX	CORBITT	BRUSH
STEVENS-DURYEA	THOMAS	PREMIER	McFARLAN SIX	AMERICAN
				NYBERG

The Truffault-Hartford Shock Absorber is now used on over 200,000 cars.

Where factory has failed to equip, the owner can provide for the omission. The equipping is simple, rendered so by blue prints of every known make, year and model of car.

Enjoy real, solid comfort! Truffault-Hartford-equip. Save your car from the racking of rough road travel. Save your tires. Make "every road a boulevard."

Write mentioning make, year, model of your car and we will tell you which of these four models is best adapted for it.

Four Models—$15.00 to $60.00. A new model will be added after January 1st.

THE HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, President
164 Bay St., Jersey City, N. J.

BRANCHES:

NEW YORK.....1700 Broadway
NEW YORK.....212-214 West 88th St.
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DETROIT.....803 Woodward Ave.
INDIANAPOLIS.....448-450 North Capitol Blvd.
KANSAS CITY.....1524 Grand Ave.
NEWARK.....289 Halsey St.
PHILADELPHIA.....1437 Vine St.

DISTRIBUTORS:

NORTHWESTERN—Reinhard Bros. Co., Inc., Minneapolis, Minn.
CANADIAN—John Millen & Son, Montreal, Toronto, Winnipeg and Vancouver.
CINCINNATI—Coughlin & Davis, 7th and Walnut Sts., Cincinnati, O.
PACIFIC COAST—Chanslor & Lyon Motor Supply Co., San Francisco, Los Angeles and Fresno, Cal.; Portland, Ore.; Seattle and Spokane, Wash.
SOUTHERN—Elyea-Austell Co., Atlanta, Ga.
TEXAS—Fisk Co. of Texas, San Antonio and Dallas, Texas.

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THE MOTOR WORLD

A Trade Paper Giving the World's Motor News

Vol. XXXIII
No. 13

New York, December 19, 1912

Ten cents a copy
Two dollars a year

DISCO DISCO DISCO DISCO DISCO DISCO

It's DISCO Everywhere

On good cars at all prices you find the Disco Starter this year.

The manufacturer who looks ahead — the dealer who is progressive — the owner who wants the best — they all must have the

"DISCO"

(REG. U.S. PAT. OFFICE.)

At the Shows

Last year's sensation was the DISCO Exhibit — the Starter that made 1912 a "Starter Year."

This year's exhibit of our line will be even more important to the trade. Don't miss it.

At NEW YORK — Madison Square Garden, Space 261
At CHICAGO — Coliseum Annex, Spaces 149 and 150

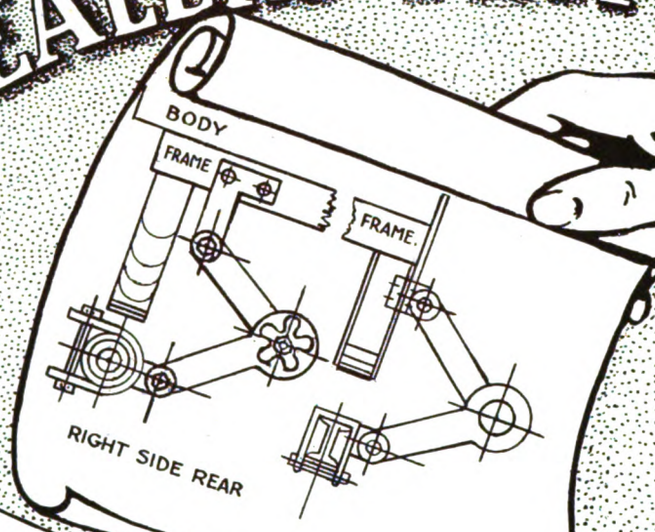
IGNITION STARTER CO., 715 Dodge Bldg., Detroit, Mich.

COLD WEATHER TIP. Agents and Dealers will make big money this winter on the Disco, the ideal cold weather starter. Works at 20 below zero as well as 105 in the shade. Write for terms.

Published Weekly by The Motor World Publishing Company, 1600 Broadway, New York

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A DEALER'S PROPOSITION



Truffault-Hartford
SHOCK ABSORBER

is distinctively a dealer's proposition. We've spent a fortune in compiling blue prints of every make, year, model of automobile manufactured since the motor car industry began. These prints show how to Truffault-Hartford-equip with a minimum of trouble and expense. The printed instructions, also provided, further simplify attachment.

Any dealer, anywhere, can sell Truffault-Hartford Shock Absorbers and put them on a car, if the purchaser does not want to do it himself.

Every car owner is a live, prospective buyer, for there is a model for every car from modest roadster to pretentious limousine and they list from

$15 to $60 a Set of Four

A new Model after Jan. 1st

No accessory better or more widely advertised. Favorably known wherever autos "chug." Giving absolute satisfaction on more than 200,000 cars. Indispensable for comfortable motoring. A reducer of upkeep cost.

A dealer's proposition, pure and simple.

Write for full particulars with details of our co-operative dealers' advertising.

HARTFORD SUSPENSION COMPANY

EDW. V. HARTFORD, President

Main Offices and Factory, 164 Bay St., Jersey City, N. J.

BRANCHES:

NEW YORK.....1700 Broadway
NEW YORK.....212-214 West 88th St.
JERSEY CITY.....141-143 Morgan St.
BOSTON.....319-325 Columbus Ave.
CHICAGO.....1458 Michigan Ave.
DETROIT.....583 Woodward Ave.
INDIANAPOLIS IND., 448-450 North Capitol Blvd.
KANSAS CITY.....1521 Grand Ave.
NEWARK.....289 Halsey St.
PHILADELPHIA.....1437 Vine St.

DISTRIBUTORS:

NORTHWESTERN—Reinhard Bros. Co., Inc., Minneapolis, Minn.
CANADIAN—John Millen & Son, Montreal, Toronto, Winnipeg and Vancouver.
CINCINNATI—Coughlin & Davis, 7th and Walnut Sts., Cincinnati, O.
TEXAS—Fisk Co. of Texas, San Antonio and Dallas, Texas.
FACIFIC COAST—Chanslor & Lyon Motor Supply Co., San Francisco, Los Angeles and Fresno, Cal.; Portland, Ore.; Seattle and Spokane, Wash.
SOUTHERN—Elyea-Austell Co., Atlanta, Ga

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LAST CALL!

Wire or telephone your space reservation, collect, for your advertising in Motor World's Before Shows Issue

and mail your copy and cuts special delivery

Only Four Days Till Closing Date

GET BUSY!

That publication serves the manufacturer best which serves the dealer most

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No Time For a Long Story

We offer you up until December 23d, space in the "Before Shows" Number of Motor World

A comprehensive advance forecast, covering the character, scope and location of exhibits at the New York and Chicago Shows.

Motor World readers will get this issue three weeks before the shows

Want to tell them *where* and *what* you will exhibit *before they arrive?*

Here's your chance!

That publication serves the manufacturer best which serves the dealer most

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Our 8,000 Dealers, Jobbers & Manufacturers

will know all about your exhibit before they enter the shows at New York and Chicago, if you use liberal space in

Motor World's "Before Show's" Number

Isn't this a bigger and better advertising opportunity than you have ever had offered you before, to lead the trade to your floor space in good time?

All of your previous show advertising has been done during and after the exhibitions.

ONLY FOUR DAYS LEFT TO GET IN

Wire your space reservation. Send your copy and cuts special delivery

That publication serves the manufacturer best which serves the dealer most

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That publication serves the manufacturer best which serves the dealer most

Manufacturers Who Want Dealer Friendliness

Will send their Big Message to the trade *before* they visit the shows

There's Still Time

to advertise in the "Before Shows" Number of Motor World

But you will have to get quick action through the wires and the mails

Rates same as usual—Service better than our previous best
DON'T BE LEFT OUT

Address MOTOR WORLD PUBLISHING COMPANY

W. H. TRIPP
Western Advertising Mgr.
1001 Ford Bldg., Detroit

B. MATHEWSON
Advertising Manager
1600 Broadway, New York

Out December 26th

Forms Close December 23d

That publication serves the manufacturer best which serves the dealer most

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Level-Headed

AS REGULAR EQUIPMENT

Check this list of cars equipping with our warning signals:

A. E. C.	Flanders	Orson
Alco	King	Pope Hartford
Armleder	Knickerbocker	Pierce-Arrow
Autocar	Knox	Pratt
Babcock Electric Roadster	Lozier	Simplex
H. H. Babcock	Marmon	Staver
Bailey	Matheson	Stearns
Benz	Metallurgique	Sternberg
Borland Electric	Michigan Electric	Stevens-Duryea
Broc Electric	Multiplex	Stoddard-Dayton
Columbia	Nance	Stover
Chicago Electric	National	Guy Vaughn
Davis	Oakland	Ward
F.I.A.T.	Oldsmobile	White

AS SPECIAL EQUIPMENT: **Cole** **Hudson** **Packard**

See how it practically includes every high priced car—conclusive proof that level-headed makers today know that their cars must be complete—with all accessories that make for comfort and safety.

And furthermore: that only those accessories everywhere recognized as *Standard*—irrespective of cost—will be accepted by the motorist.

All high grade cars—with but very few exceptions—are today Klaxon-equipped. Partly because the bulb horn is commonly known to be thoroughly inadequate; principally because the Klaxon is *Standard* and because the mere mention of its name means to the car buyer: "the best signal it is possible to buy."

Only one or two makers of high priced cars today are saying: "We will consider the Klaxon for 1914" or "We won't equip until our customers make us."

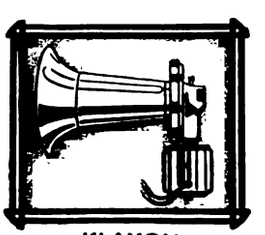


KLAXONET

Lovell-McConnell Mfg Company Newark, N.J., U.S.A.

KLAXON

"The Public Safety Signal"



KLAXON

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Studebaker

Some Studebaker Specialties That Simplify Selling

Here are a couple of hundred words that will give you in a nutshell the Studebaker argument—you can pass them along to a possible customer with very good results. Maybe you know the whole story now—but it won't hurt to refresh your mind. And any Studebaker story is refreshing.

Consider the new Studebaker "35" for instance.

1st. Studebaker new cars mean real newness. Not some little insignificant change but actual, valuable improvements. That's the Studebaker way which means money for them and for you.

2nd. Studebaker motors give full horsepower. Rating is more than a figure—it's an actual measure of the power each motor gives. That's the Studebaker way which means money for them and for you.

3rd. Studebaker endurance means that every bolt, nut, rod and casting is built to give lasting, enduring service. How do we know this? We make every part ourselves. That again is the Studebaker way which means money for them and for you.

4th. Studebaker simplicity, luxury, convenience, looks, comfort—every big or little detail is decided with the same unchanging determination to make the Studebaker way mean money for them and for you.

5th. Studebaker advertising is just as much stronger and braver and "selling-er" as Studebaker cars are. It runs all the year round in the best magazines, weeklies and newspapers the country over. And it helps—it's written to sell cars from your depot and it does. That once more is the Studebaker way which means money for them and for you.

"20" Delivery Car	$800	"30" Touring Car	$1190	"Six" Touring Car	$1550
"20" Roadster	835	"35" Touring Car	1290	"Six" Roadster	1550
"25" Touring Car	885	"35" Sedan Type	2050	"Six" Limousine	2500
		"35" Coupe	1850		

All prices for cars fully equipped F. O. B. Detroit

THE STUDEBAKER CORPORATION
DETROIT, MICH.

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